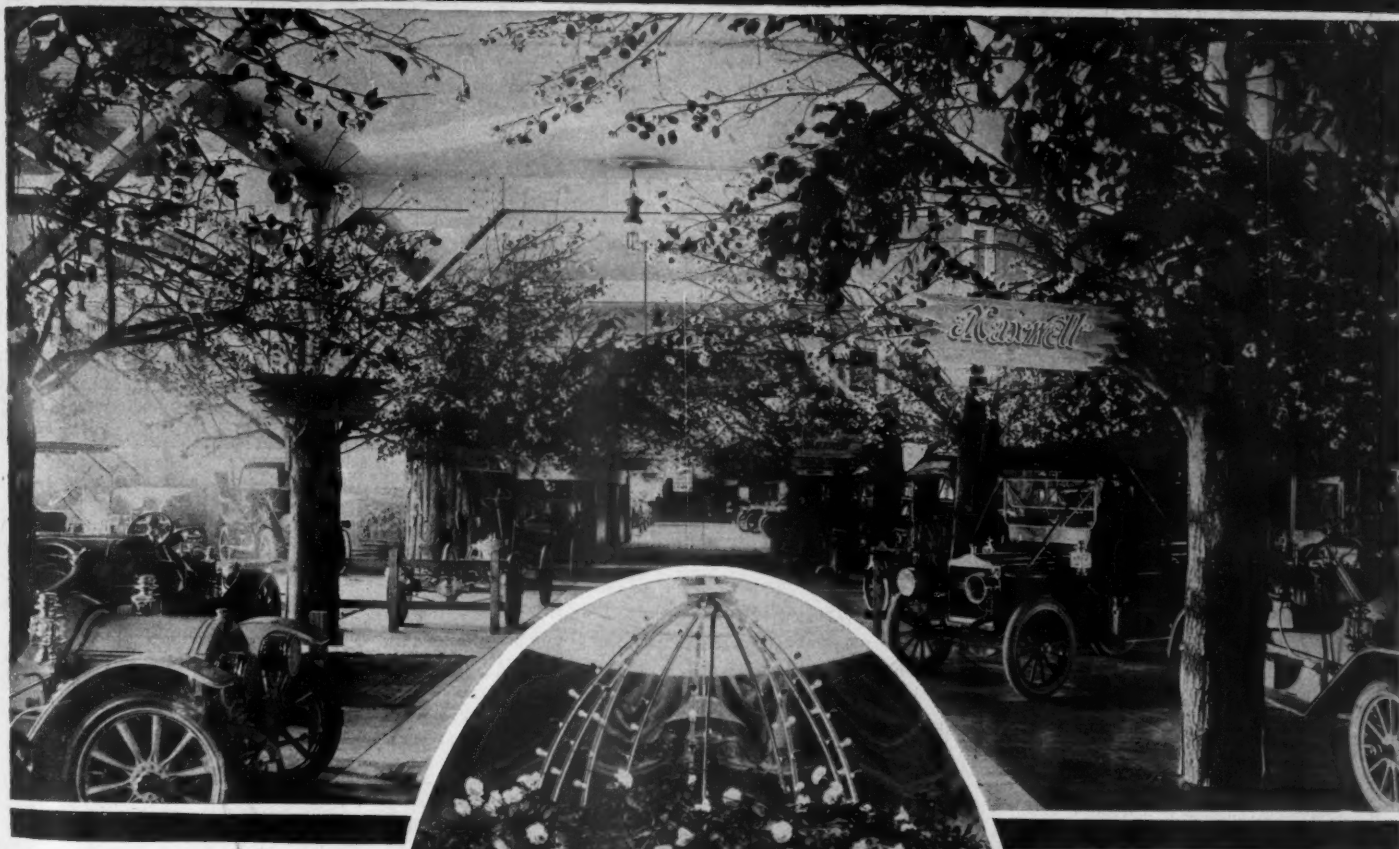


MOTOR AGE

NEW ENGLAND SHOW ATTRACTIVE AS EVER



BOSTON, Mass., March 5—Boston's annual motor show opened here tonight and the thousands who flocked into the building—enough to make a good sized city, there being more than 30,000, it was estimated—found an exhibition that exceeded its predecessors in many ways. The decorative effects were prettier, there being a liveliness to it even so far as having real canaries singing in the tree tops; there were more cars shown; the total makes numbered more than other years; the space was increased, and the number of exhibitors surpassed previous years. To get down to real figures as a basis, there are on the list now 285 exhibitors. This means there are just that many who have got

some attractions, but here and and not really of magnitude enough vice that is rather of a side issue and not really of magnitude enough to be a real exhibitor. If these were counted it would send the total above 300.

There is something worth considering in the figures, comparing the two departments, the vehicle exhibitors and the accessory people. If one were asked offhand how the figures stood, he might say that there were many more accessories than vehicle makers. But it is not so. For example, there are 141 exhibitors who have vehicles in the building, and so that leaves 144 outside for the other class. To cut off some of the things, such as trade journals, confectionery, etc.,

NEAR-TO-NATURE EFFECT OF BOSTON SHOW
FLOWER PAGODA, ONE OF BOSTON'S FEATURES



MAIN HALL OF THE BOSTON SHOW WITH STAGE-FULL OF CARS IN BACKGROUND

BOSTON EXHIBITORS

American Automobile Co., Boston
 Austin Automobile Co., Boston
 Abbott-Detroit Boston Co. of New England, Boston
 Auto Supplies Co., Holyoke, Mass.
 Atlas Motor Car Co., Springfield, Mass.
 Atlas Rubber Co., Boston
 American Storage Battery Co., Boston
 Ajax Trunk and Sample Case Co., New York
 Autocar Co., Ardmore, Pa.
 American Simplex Co., Boston
 Austin & Dotten, Boston
 Adams & Co., J. Q., Boston
 American Ever Ready Co., Boston
 Auto Improvement Co., New York
 Ajax-Grieb Rubber Co., Boston
 Atwater Kent Mfg. Wks., Philadelphia
 American Motor Co., Brockton, Mass.
 Auburn Auto Pump Co., Auburn, N. Y.
 Arseno Electric Co., New York
 Aurora Automatic Mach. Co., Chicago
 Bowman Co., J. W., Boston
 Bailey & Co., S. R., Amesbury, Mass.
 Buick Motor Co., Boston
 Butler Motor Car Co., Boston
 Boston Auto Garage Co., Boston
 Boston Motor Co., Boston
 Baker, Roy C., Boston
 Buxton Mach. Co., W. A., Worcester
 Berkshire Auto Car Co., Pittsfield, Mass.
 Brush Runabout Co., Detroit, Mich.
 Boston Elec. Auto Garage, Boston
 Bi-Motor Equipment Co., Boston
 British Napier Motors, Jamaica Plains, N. Y.
 Burn Boston Battery Co., Boston
 Bowser & Co., S. F., Boston
 Boyd, F. Shirley, Boston
 Brunner Mfg. Co., Utica, N. Y.
 Baldwin Chain and Mfg. Co., Worcester, Mass.
 Boston Tire and Rubber Co., Boston
 Bosch Magneto Co., New York
 Burroughs Rim Co., New York
 Baldwin Tumbler Carrier Co., Boston
 Batavia Rubber Co., Batavia, N. Y.
 Corlew-Coughlin Co., Boston
 Castle, H. C. & C. D., Inc., Boston
 Curtis-Hawkins Co., Boston
 Clapp, Harry A., Boston

the figures would be very nearly even.

There are ninety-two makes of gasoline cars represented here. Last year there were sixty-six makes in the show. That is a tremendous leap. It does not mean, however, that twenty-six more makes of different names are in the show, for there are some that were represented 2 years ago and the agencies lapsed or something, and they did not get in last year. And there are some makes not in this year that were in a year ago. However, there are some really new cars shown.

This is the first year for the Everitt, Flanders, Hudson, Abbott-Detroit, Krit, Ohio, Velie, Morse, Black Crow, Demot, Johnson, Empire, Mercer, Fuller, Kline, Anderson, Standard Six, Firestone-Columbus and Warren-Detroit. There are more pleasure vehicles in the basement than ever before and they rank about equally with the commercial types. To house all the exhibitors took 107,000 feet of space and it was estimated that the value of the exhibition totals \$2,500,000.

In dividing up the vehicle exhibitors it was found that ninety-nine are gasoline pleasure makes, eight are electrics, two steam, twenty-seven commercial and twelve

motor cycles. There is a gain of two in the electric field over a year ago and last year there were but ten commercial makes shown, a gain this year of more than 50 per cent. The commercial field is developing so rapidly here now that with the great impetus that the pleasure cars are getting, too, it will be a most difficult task to house future shows properly and get everyone in that wants to be represented.

Census of the Show

The makers of pleasure cars, comprising gasoline, steam and electric, have on display 324 vehicles, and when the commercial vehicles are added it brings the total up to 391. Of this number there are 237 open cars, forty-nine closed machines, forty chassis and sixty-five trucks or wagons. There are not so many torpedo





ANOTHER VIEW OF BOSTON SHOW, GIVING AN IDEA OF CAR GROUPINGS

bodies as one might expect after having been to other shows and apparently they have been sold or the makers did not care to send them to conservative New England. However, there are a dozen or so that give the exhibition just the added change from last year to make comparisons with what preceded them in the body-building line. Of these torpedo bodies, one of the most noticeable is a Knox. The Franklin has its gray sharp-prow torpedo and that is attracting much attention. There are other torpedo cars that are very attractive, to be sure, and they get their share of attention.

Because of its situation in a center from which radiates so many lines of business Boston is somewhat unique and it gets all the best there is in many ways, but more so in the motor industry. So a show like

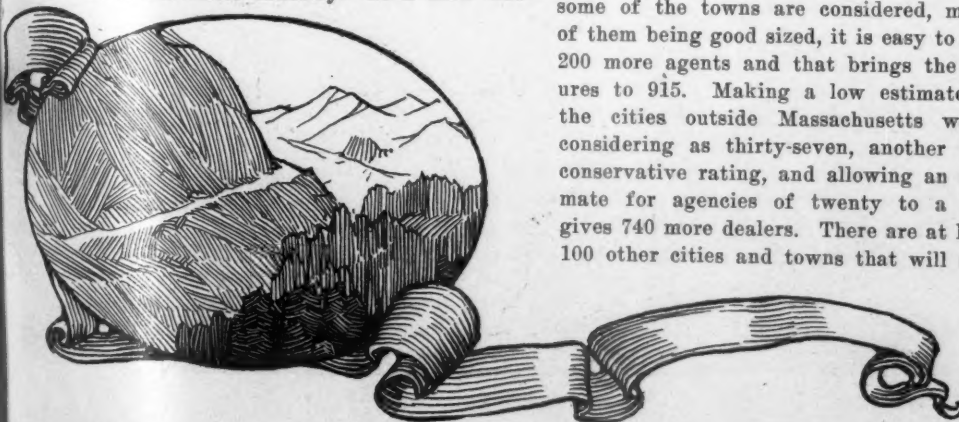
this means a great deal to New England, for that is what it really is. Other cities have their little shows, of course, but it is like comparing them by contrast in a melodrama with grand opera. In looking over the six New England states it is possible to pick out about seventy cities of very good size, places where wealth has been accumulated throughout the years and this wealth to a great degree is being turned toward the motor industry current.

Many Dealers at Show

Take Massachusetts alone. It has thirty-three cities and more than 300 towns. Now, from all those cities will come agents by the score and as we always are very conservative here it would be putting the figure low to say twenty-five from each city. That would give 715. When some of the towns are considered, many of them being good sized, it is easy to add 200 more agents and that brings the figures to 915. Making a low estimate of the cities outside Massachusetts worth considering as thirty-seven, another low, conservative rating, and allowing an estimate for agencies of twenty to a city gives 740 more dealers. There are at least 100 other cities and towns that will send

BOSTON EXHIBITORS

Crane Co., L. M., Boston
 Chandler & Farquhar Co., Boston
 Coates Clipper Mfg. Co., Worcester, Mass.
 Columbus Buggy Co., Boston
 Clayton Air Compressor Works, Boston
 Columbia Tire and Top Co., Boston
 Champion Ignition Co., Flint, Mich.
 Culver-Stearns Mfg. Co., Worcester, Mass.
 Connecticut Oil Co., Waterbury, Conn.
 Craig Co., David, Boston
 Colton Combination Tool Co., Chester, Vt.
 Continental Caoutchous Co., New York
 Coes Wrench Co., Worcester, Mass.
 Columbia Lubricant Co., New York
 Coward, John D., Boston
 Conn. Tel. & Electric Co., Meriden, Conn.
 Chase & Co., L. C., Boston
 Consolidated Rubber Tire Co., Boston
 Cramp & Sons, Wm., Philadelphia, Pa.
 Crouch Motor Co., Stoneham, Mass.
 Consolidated Mfg. Co., Toledo, O.
 Cleveland Speed Ind. Co., Cleveland, O.
 Couch & Selley Co., Boston
 Daniels, Smally, Boston
 Dodge Motor Vehicle Co., Boston
 Dunham Co., George J., Boston
 Dike, Francis, Boston
 Duren & Kendall, Boston
 Downing, C. J., 177 Broadway, New York
 Diamond Rubber Co., Akron, O.
 Dover Stamping and Mfg. Co., Cambridge, Mass.
 Dixon Crucible Co., Boston
 Easton Machine Co., Boston
 Eastman, W. E., Charlestown, Mass.
 Eldridge, W. E., Boston
 E-M-F Boston Co., Boston
 Eaton, Charles A., Boston
 Empire Tire Co., Trenton, N. J.
 Eco Mfg. Co., Boston
 Electric Storage Battery Co., Boston
 Eagle Oil and Supply Co., Boston
 Emblem Mfg. Co., Angola, N. Y.
 Excelsior Supply Co., Chicago
 Eisner & Co., Harry, Boston
 Fuller, Alvan T., Boston
 Fiat Automobile Co., Boston
 Ford Motor Co., Boston
 Franklin Automobile Co., Boston
 Flat Repair Co., Boston
 Ford Co., Percy, Boston
 Fisk Rubber Co., Chicopee Falls, Mass.



BOSTON EXHIBITORS

Federal Rubber Co., Boston
 Firestone Tire and Rubber Co., Akron, O.
 Fox Metallic Tire Co., Brooklyn, N. Y.
 Flentje, Ernest, Cambridge, Mass.
 Forbes, W. J., Boston
 General Vehicle Co., Boston
 Gray & Davis, Amesbury, Mass.
 Gramm Motor Car Co., Boston
 Gabriel Horn Co., Cleveland, O.
 Grout Auto Co., Boston
 Goodyear Tire and Rubber Co., Boston
 Goodrich Co., B. F., Boston
 Gasoline Motor Efficiency Co., Jersey City, N. J.
 G & J Tire Co., Indianapolis, Ind.
 Gilbert Mfg. Co., New Haven, Conn.
 Henshaw, C. S., Boston
 Hudson-Colby Co., Boston
 Hol-Tan Co., Boston
 Hub Auto Renting Co., Boston
 Henderson-Lowe Co., Boston
 H. I. K. Co., Boston
 Harvey Co., Arthur C., Boston
 Harrison Engine Co., Boston
 Hydraulic Oil Storage Co., New York
 Hilton Mfg. Co., Boston
 Howard Detachable Rim Co., Trenton, N. J.
 Hillman Auto Supply Co., Boston
 Hopewell Brothers, Newton, Mass.
 Herz & Co., New York
 Hofferer Co., Boston
 Harris Oil Co., A. W., Providence, R. I.
 Heinze Electric Co., Lowell, Mass.
 Hart & Fuller, Hartford, Conn.
 Hartford Rubber Works Co., Hartford, Conn.
 Hartford Suspension Co., Jersey City, N. J.
 Hudson-Colby Co., Boston
 Havoline Oil Co., Boston
 Hendee Mfg. Co., Springfield, Mass.
 Holt & Beebe, Boston
 Isotta Import Co., Boston
 Ideal Windshield Co., New York
 Iver Johnson Sporting Goods Co., Boston
 Jenkins & Co., W. M., Boston
 Jeffery & Co., Thomas B., Boston
 Jones Speedometer Co., New York
 Jordan, R. W., Boston
 Jacobs, Volney J., Boston
 Keystone Lubricating Co., Philadelphia
 Kissel Kar Co., Boston
 Kemble, A. M., Greenwich, Conn.
 Kempshall Tire Co., Boston

to Boston an average of five dealers each, and when they are all added up the total makes 1,990. Manager Campbell expects to have more than 2,000 active dealers registered with him for the week.

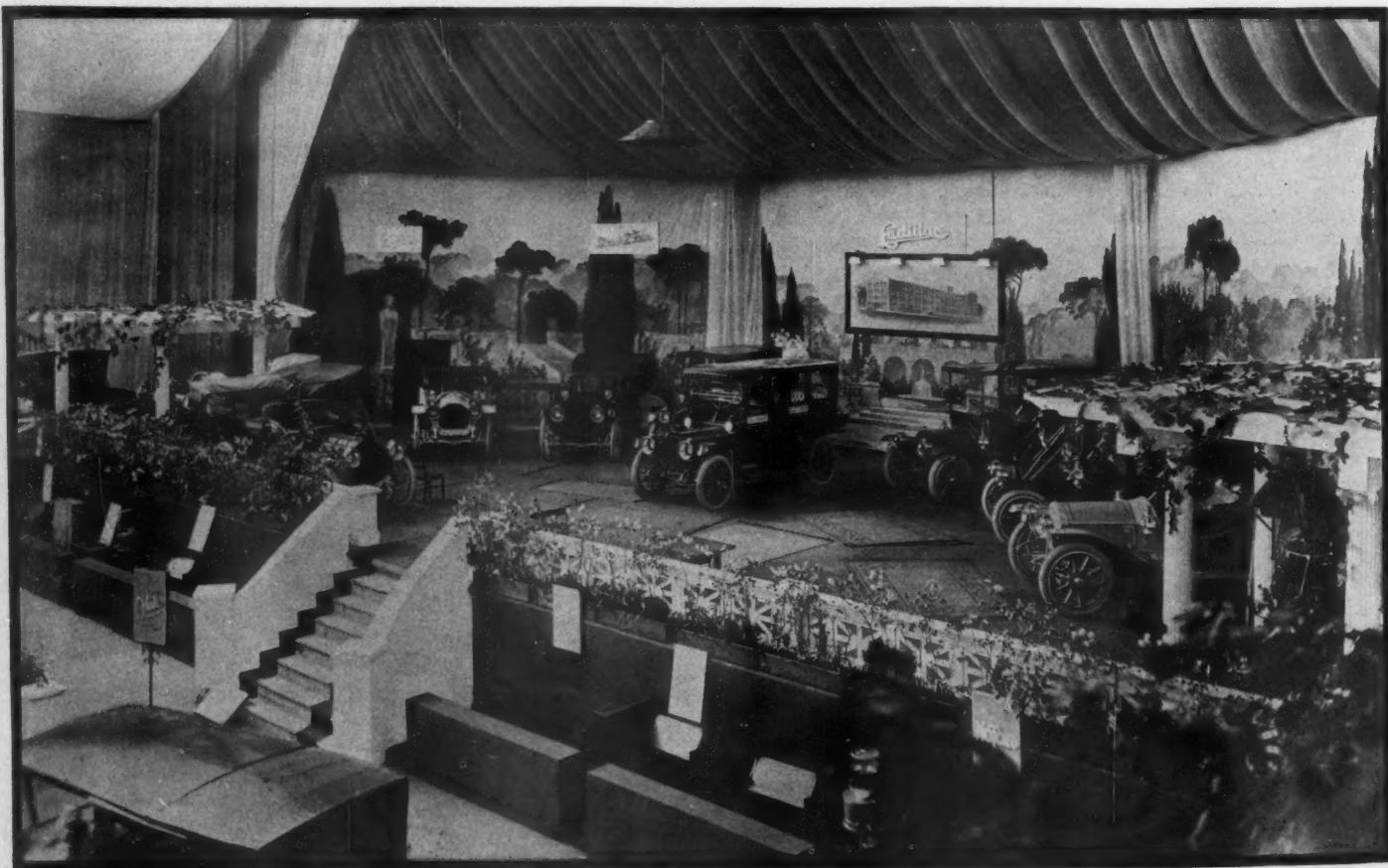
That these men will sell a lot of cars is an assured fact. Boston is rather noted for its retail sales at show time, for many men who have been dickering about a car throughout the winter want to look the machines over before parting with their cash. Added to this is the great spring trade for which Boston is noted, when men come to do the city from all over New England to give their orders for lots of things for the summer. These men are great traders and they buy a lot



of things each spring. Now, the motor show affords them the opportunity to come to Boston at the right time to give their orders for regular business and see something worth looking at. Every day the show is thronged by these men, who wander about and quietly ask questions, turning over in their minds whether their in-

Kilgore Mfg. Co., Boston
 Knapp-Greenwood Co., Boston
 Kennedy Carburetor Co., Boston
 Kellom & Co., Charles F., Boston
 K. W. Ignition Co., Cleveland, O.
 Locomobile Co. of America, Boston
 Linscott Motor Co., Boston
 Lunt-Moss Co., Boston
 Lyon Non-Skid Co., Philadelphia
 Lavalette Co., New York
 Lovell-McConnell Mfg. Co., Newark, N. J.
 Leland & Co., W. H., Worcester, Mass.
 Leather Tire Goods Co., Niagara Falls, N. Y.
 Maguire Co., J. W., Boston
 Motor Print, Philadelphia, Pa.
 Matherson Auto Co., Boston
 MacAlam, J. H., Boston
 Morse & Co., Alfred Cutler, Boston
 McCue Co., Hartford, Conn.
 Motor Specialties Co., Boston
 Murray Co., P. A., Newton, Mass.

Moore Smith Co., Boston
 Maching, Theodore H., New York
 Morgan Co., R. L., Worcester, Mass.
 Martin Carriage Works, York, Pa.
 Metcalf Machine Works, George A., Woonsocket, R. I.
 Michelin Tire Co., Milltown, N. J.
 Morgan & Wright, Detroit, Mich.
 Mezgar, Inc., C. A., New York
 Miller, Charles E., New York
 Miami Cycle and Mfg. Co., Middletown, O.
 Merkel Light Motor Co., Pottstown, Pa.
 Nichols & Co., D. P., Roxbury, Mass.
 Neale, A. F., Boston
 National Carbon Co., Cleveland, O.
 N. Y. and N. J. Lubricant Co., New York
 Nightingale Whistle Co., New York
 Noonan Tool and Mach. Co., A. S., Rome, N. Y.
 Oakley Steel Foundry Co., Millbury, Mass.
 Olds-Oakland Co., Boston



STAGE IN MAIN HALL OF BOSTON SHOW, WHERE PACKARD AND CADILLAC ARE LOCATED



come is sufficient to allow them a car. Before leaving many of them settle the question in the affirmative. This year, because of the many good cars at lower prices than ever that are on the market, the orders will be larger than many dealers can handle and when it is all summed up more than one dealer will have the same

experience he had a year ago—refunding deposits because the output was not large enough.

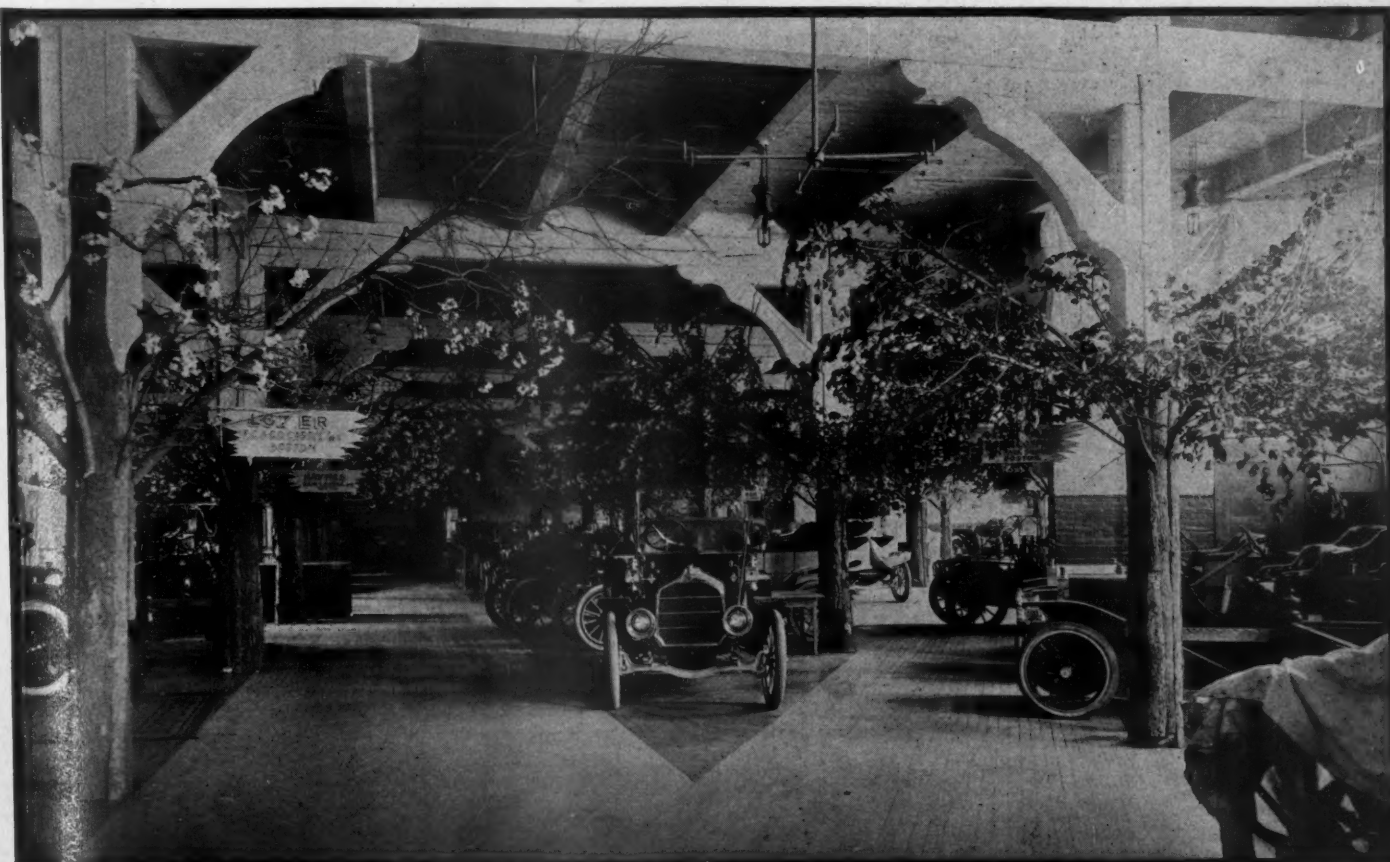
So much for the buyers—that is, those who are recruits. There is another vast army interested in the show worth considering, and that is the legion of motorists. In New England today there are about 50,000 motorists or there will be by summer when most of them get the cars they have ordered. Of this number 25,000 belong to Massachusetts. From all sections of the six states they are either on the way or are planning to come to Boston. Of the army a large number have ordered new machines. Many more are thinking of getting them and so there

Oulton Motor and Mfg. Co., Boston
Peerless Motor Car Co., Boston.
Park Square Auto Station, Boston
Panhard Oil, Boston
Premier Motor Car Co. of N. E., Boston
Proctor Supply Co., G. H., Boston
Parker & Co., F. R., Boston
Pope Mfg. Co., Hartford, Conn.
Parker Motor Co., Hartford, Conn.
Poison, W. F., Buffalo, N. Y.
Penn. Rubber Co. of N. Y., Jeanette, Pa.
Post & Lester Co., Boston
Pittsfield Spark Coil Co., Dalton, Mass.
Pantasote Co., New York
Pittsburg Auto Eq. Co., Pittsburg, Pa.
Pierce Cycle Co., Buffalo
Perfection Wrench Co., Port Chester, N. Y.
Russell & Co., W. L., Boston
Regal Motor Co., Boston
Rainier Co., Boston
Reliance Motor Car Co., Owosso, Mich.

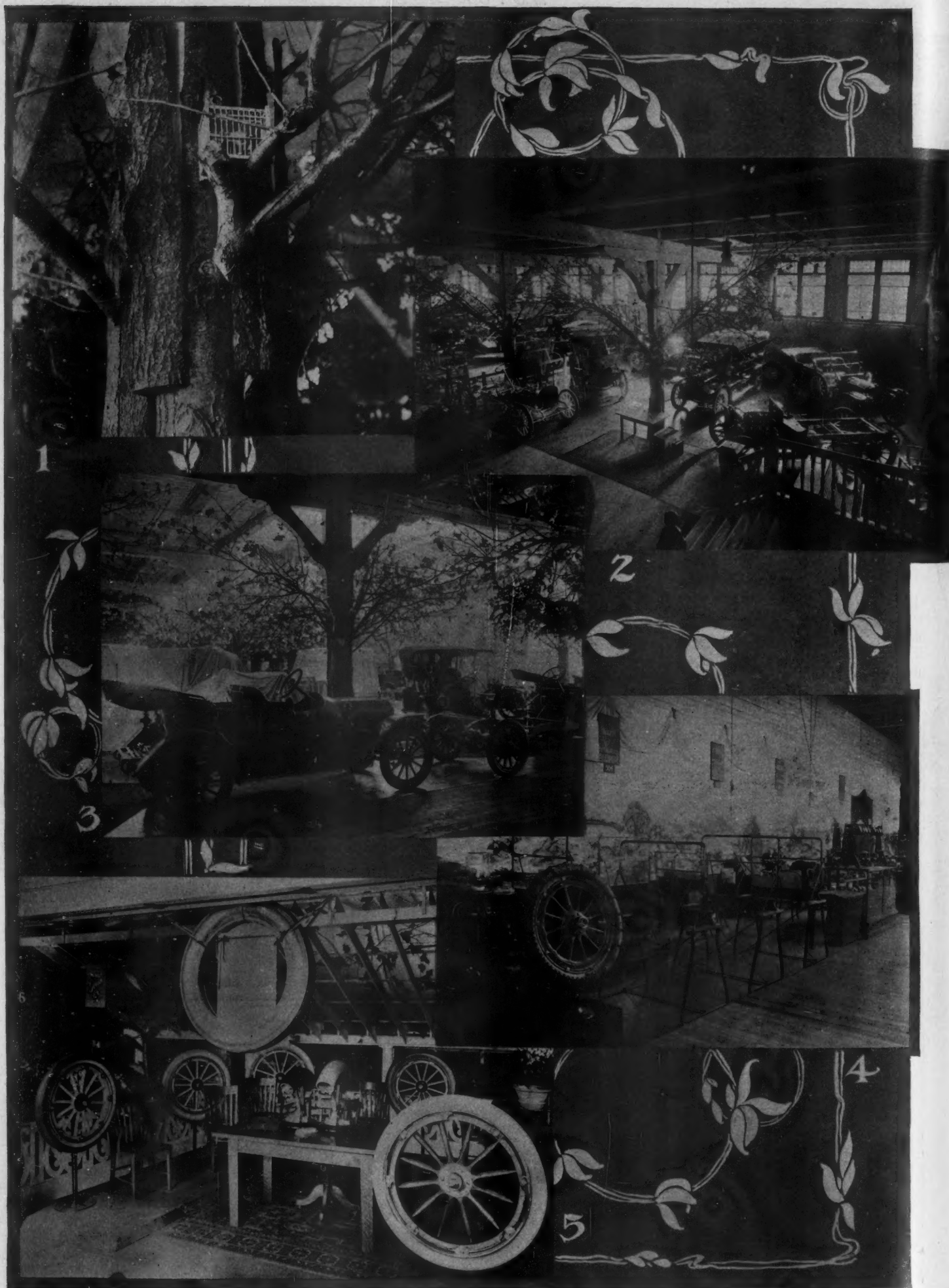
Rogers, Leo N., Roxbury, Mass.
Rauch & Lang Carriage Co., Cleveland, Ohio
Rayvello Chem. Co., Malden, Mass.
Russell, T. F. & Co., Boston
Reliance Speedometer Co., Boston
Randall-Falchney Co., Boston
Robinson & Son Co., Boston
Republic Rubber Co., Youngstown, O.
Remy Electric Co., Anderson, Ind.
Reliance Motorcycle Co., Owego, N. Y.
Reading Standard Co., Reading, Pa.
R. I. V. Bearings
Rutherford Rubber Co., Rutherford, N. J.
Suburban Concrete Block Co., Somerville, Mass.
Sawyer Oil Co., Howard B., Boston
Simmons, Hatch & Whitten Co., Boston
Smith, Fred S., Boston
Stanley Motor Carriage Co., Newton, Mass.
Stevens-Sowers Motor Car Co., Boston

BOSTON EXHIBITORS

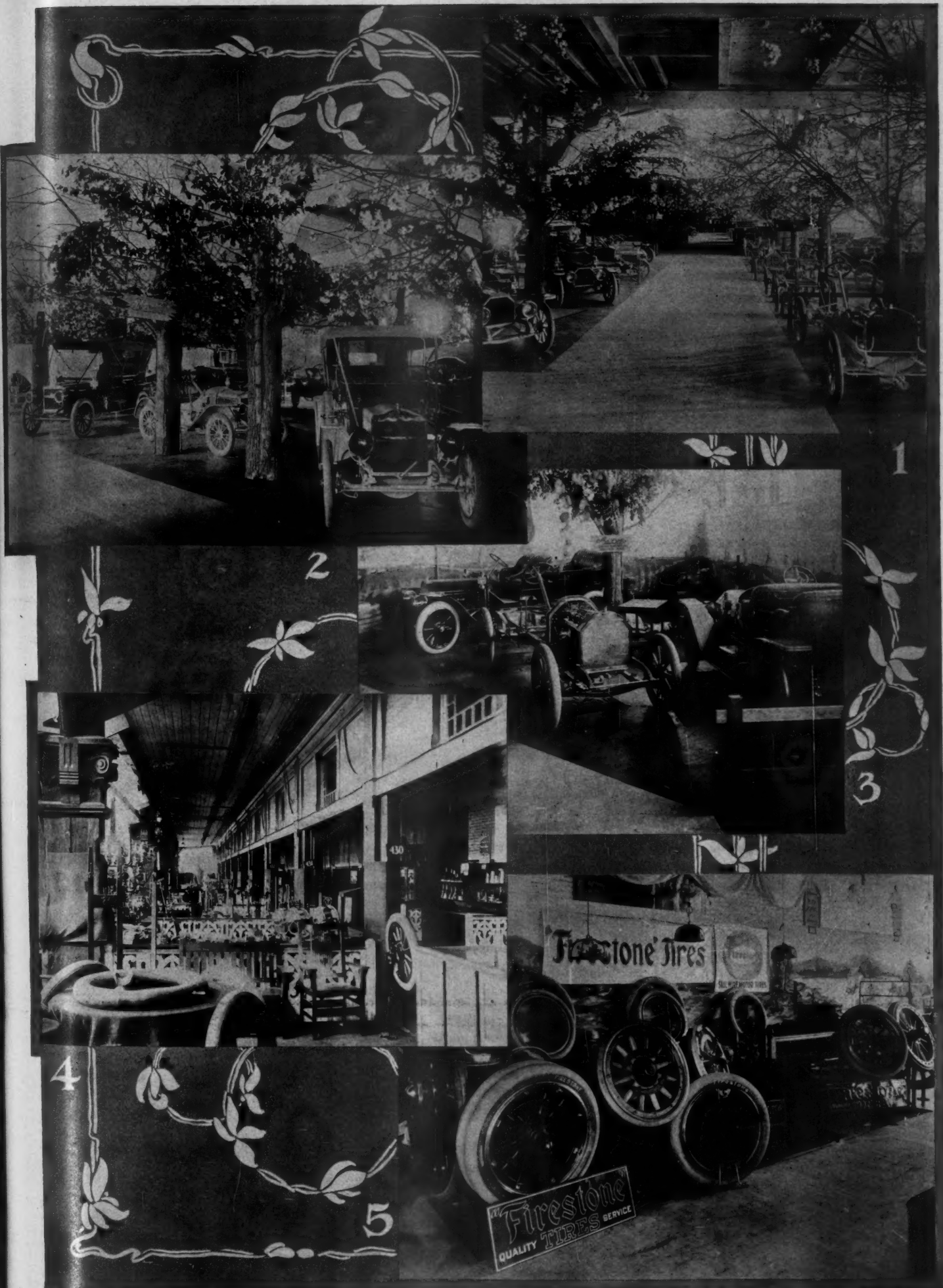
Studebaker Bros. Co. of N. Y., Boston
Sanders, N. S. H., Boston
Selden Motor Car Co., Boston
S. M. Supplies Co., Boston
Star Auto Locks, Boston
Schacht Mfg. Co., Cincinnati, O.
South End Motor Car Co., Boston
Sampson Mfg. Co., Alden, Pittsfield, Mass.
Standard Motor Car Co., Boston
Sterling Hardware Co., New York
Stackpole Battery Co., St. Mary's, Pa.
Smith Co., Wm. J., New Haven, Conn.
Standard Welding Co., Cleveland, O.
Splittorf, C. F., New York
Standard Thermometer Co., Roxbury
Salman Co., John A., Boston
Shawmut Tire Co., Boston
Standard Tire & Rubber Co., Boston
Seamless Rubber Co., New Haven, Conn.
Swinehart Tire and Rubber Co., Akron, Ohio
Stromberg Motor Devices Co., Chicago
Spaulding Mfg. Co., Boston
Sage Trunk Co., Boston
Sireno Co., New York
Sheldon Axle Co., Trenton, N. Y.
Teel Mfg. Co., Medford, Mass.
Twin Elm Spring Water Co., Boston
Tyler, Frank J., Boston
E. R. Thomas Motor Co., Boston
Underhill Co., Boston
U. S. Light and Heating Co., Boston
Underhay Oil Co., Boston
Victor Metals Co., Braintree, Mass.
Veeder Mfg. Co., Hartford, Conn.
Victor Auto Supply Co., New York
Vacuum Oil Co., Rochester, N. Y.
Valentine & Co., Boston
Voorhees Rubber Co., Jersey City, N. J.
Winton Motor Carriage Co., Boston
White Co., Boston
Welch Motor Car Co. of N. E., Boston
Whitten-Gilmore Co., Boston
Whittaker Chain Tread Co., Boston
Weed Chain and Tire Grip Co., New York
White-Ware & Co., Boston
Westinghouse Elec. Mfg. Co., Pittsburg, Pa.
Warner Gear Co., Muncie, Ind.
Whittaker Chain and Tread Co., Boston
White & Bagley Co., Worcester, Mass.
Warner Instrument Co., Boston
Wing, F. E., Boston
Whitney Mfg. Co., Hartford, Conn.
Ward & Sons, E. T., Boston
Wilkinson Co., A. J., Boston



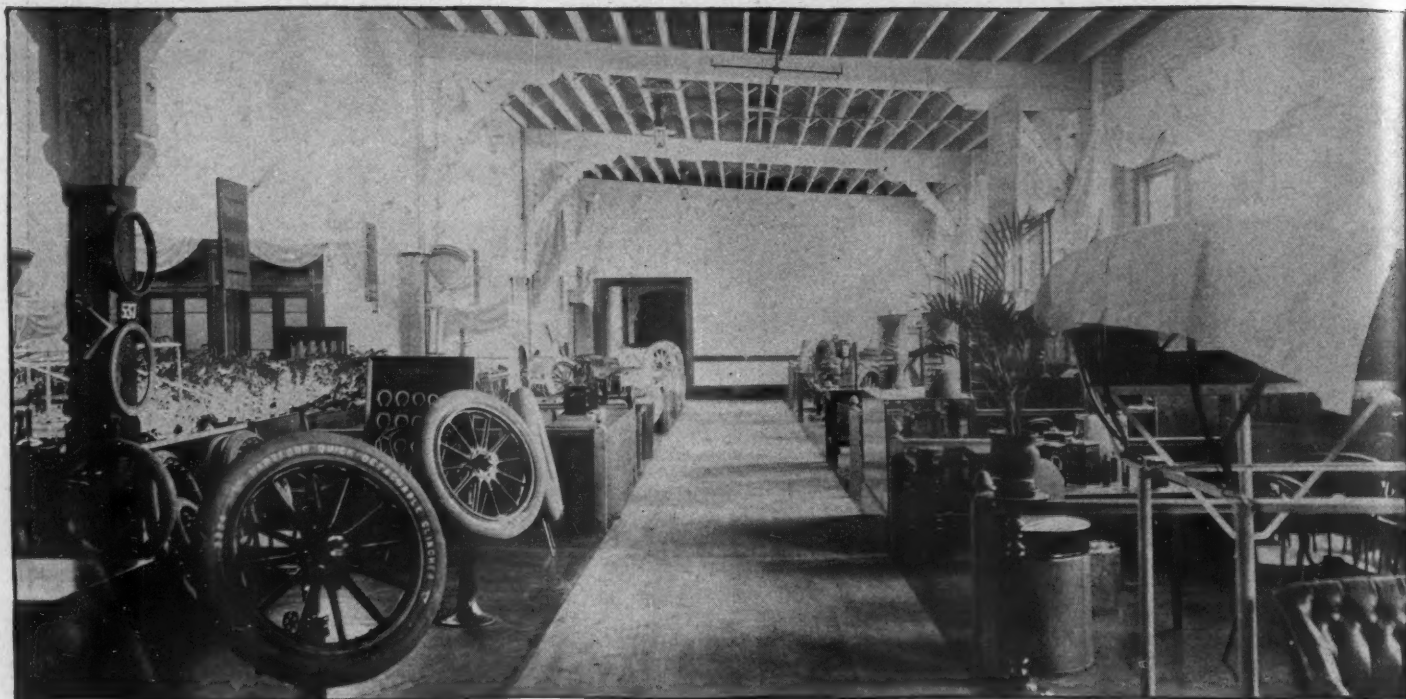
WOODLAND SCENE IN THE BOSTON SHOW—ONE OF THE ATTRACTIVE SPOTS OF THE EXHIBITION



1—LIVE CANARIES A SHOW FEATURE 2—THE RAMBLER DISPLAY 3—WHERE COLUMBIA CARS ARE SHOWN 4—UNITED MANUFACTURERS' STAND
5—CONTINENTAL TIRE BOOTH



1—MAIN AISLE LOOKING TOWARD ENTRANCE 2—THE MAXWELL EXHIBIT 3—THE NEW MORSE CAR 4—EAST GALLERY MAIN EXHIBIT HALL
5—THE FIRESTONE STAND



A BOSTON SHOW SCENE—VIEW IN THE ACCESSORIES SECTION

will be sales from this class that will pile up the profits for the New England dealers. When the week is over the attendance figures will have run up above 100,000 easily and the money represented in sales of cars and accessories will go well into the millions.

The Boston Automobile Dealers' Association that is handling the show did not spare any expense in decorating the place for they decided to make it as beautiful as possible. As a result the place is better than ever. Apple blossom time, the season when one glories in the wealth of beauty, when nature smiles bewitchingly, is faithfully depicted in Machinery hall. It was not brought about with the aid of the artist's brush, either. The decorators transplanted nature itself within doors, for there were the trees, real bark and boughs,

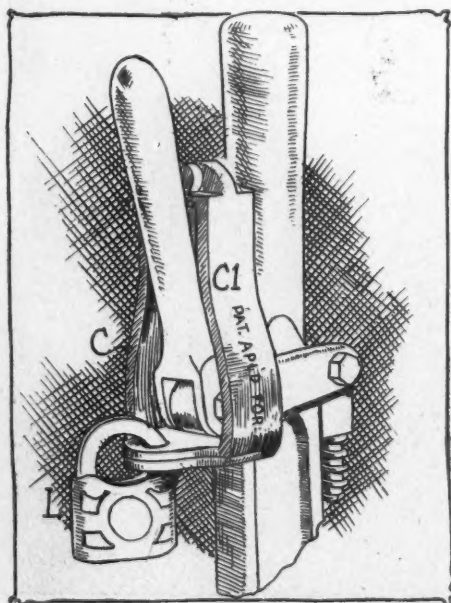


FIG. 1—THE STAR LOCK

Accessories A Feature At Boston

the latter nodding a welcome as currents of air swept through the aisles.

The woodland effect is enhanced by the dividing lines between the spaces. Old-fashioned fence rails, weather-beaten fence rails typical of the era preceding barbed wire, separate the different makes of cars. With birds singing merrily and here and there a touch of landscape along the walls, the illusion is complete.

Additional beauty is reserved for Grand hall. The atmosphere of warmth and flowers is carried to even a greater degree there. A wealth of flowers throw their perfume about, creating a sweet-scented air. In the center of the hall a large fountain is throwing sprays of water into the air and the continual flow cools the air and prevents its becoming heavy with perfume.

Profusion of Flowers

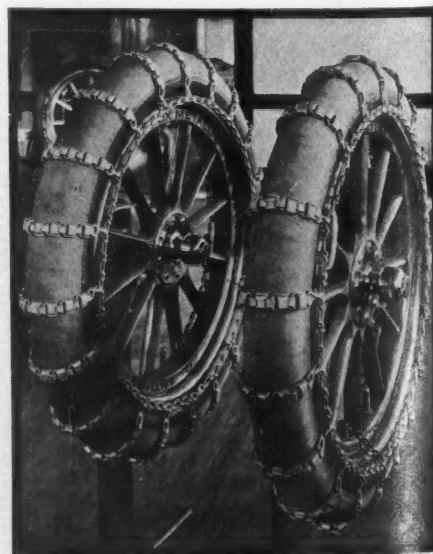
There is nothing artificial in the profusion of flowers lavishly scattered about. Hybrid lilies in bud and in full bloom, nearly 5 feet high, give a rich profusion of white and delicate coloring. Shrubs trimmed to a symmetrical shape without spoiling their natural lines make ideal divisional lines and at the same time form an excellent setting for the cars. The sides of the spaces are formed by lower hedges of spirea van honti with its dainty white blossoms and clean foliage. The shrubs are growing in deep troughs, in which are set thickly hundreds of imported tulips in full bloom. Nature itself could not improve on the scene when the general effect is studied.

Nor is that all. The big stage lends it-

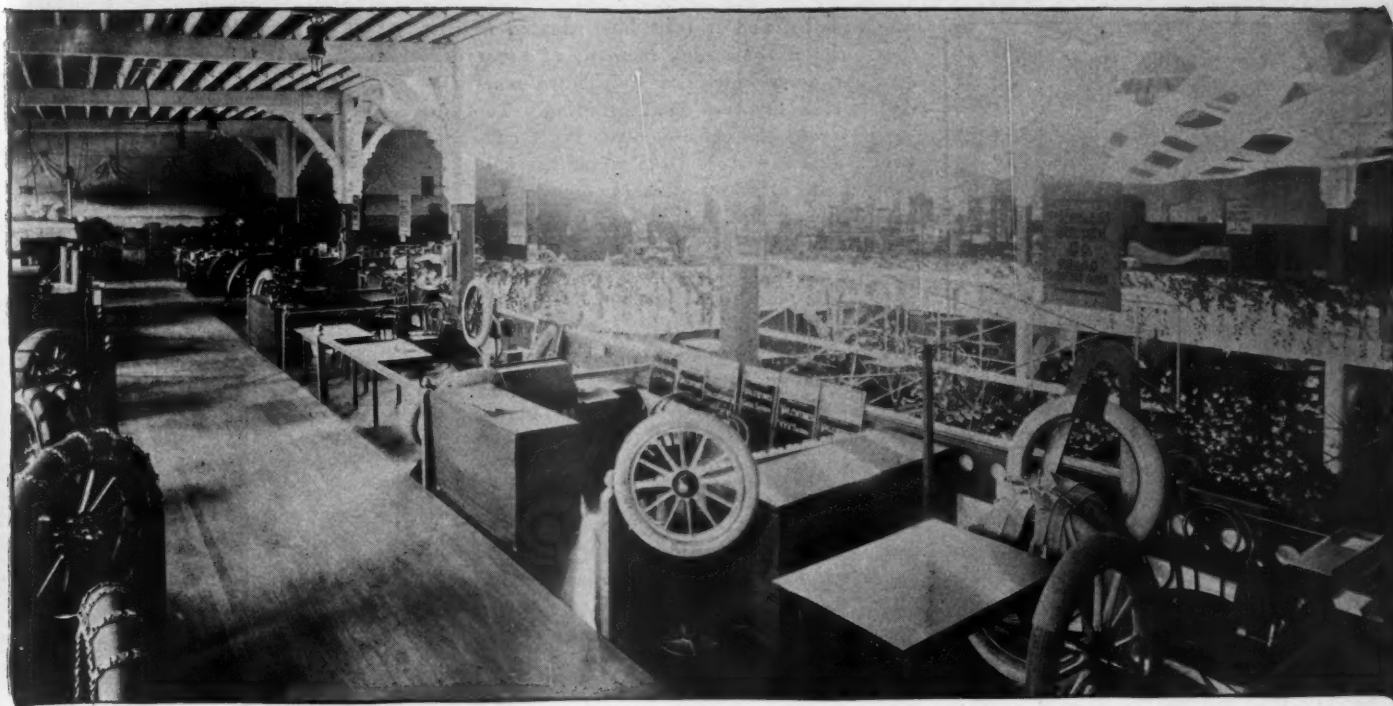
self to the general scheme by providing a means to form a large hedge of lilacs and vines that beginning there winds itself gracefully all around the balcony, furnishing the needed green and purple effect. Continuous landscapes sweep around the hall, giving the proper perspective for an outdoor scene. Garlands of lamps hang beneath the balconies and high up in the air are hundreds of more lights.

Independent Show On

The old Art Museum in Copley square Boston, has been turned over to those who failed to get space at the big show in Mechanics' building, and the effort, while it is less pretentious than that of the trade association, attracts its measure of the patrons in Boston and vicinity. The loca-



THE LYON ANTI-SKID CHAIN



SCENE SHOWING LOCATION OF ACCESSORIES' STANDS IN THE BALCONY

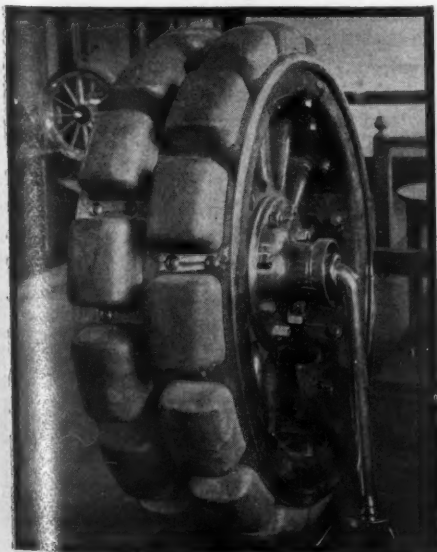
Napier and Morse Make Their Bow

tion of the museum is so thoroughly advantageous that every motorist in going to and from the railway trains at Back Bay had attention drawn to the independent show, by large and well placed signs which are clearly seen from a distance. The attendance is reported as encouraging in the extreme, and the independents who have the courage of their convictions feel justified in thus making what must be termed an ambitious effort. The exhibitors at the independents' show are: Lynn Automobile Co., Boston, Hupmobile; Rainier Co., Boston, Rainier; Nock Auto Co., Providence, Lexington; Manhattan Motor Truck Co., Boston, Manhattan; Parry Co., Boston, Parry; Flint Wagon Works, Flint, Mich., Whiting.

THE number of new cars seen at the Boston show is very small. Motor Age, as heretofore, pursues its policy of only describing those cars which have not been described at previous shows, and as a consequence the Napier and Morse descriptions are the only ones appearing herewith, all of the other cars exhibited having been seen at some of the other shows throughout the country.

The Napier cars, shown by the British Napier Motors, Inc., are displayed in several lines. The company builds two, four and six-cylinder cars, the last mentioned in 30, 45, 60 and 65-horsepower type. The two and four-cylinder cars are especially adapted for town work. They have the unit form of construction, the gearcase surrounding the clutch and bolting to the rear end of the crankcase. The flywheel is placed in front. Cylinders are cast in pairs, with all valves on the left side. The distinctive Napier hood and radiator, the latter with its long tubular filling cap, is found on these small cars as well as on the sixes. The clutch is another distinctive feature of the Napier cars, with metal-to-metal surfaces running in oil. Worm drive is used on the smaller models, although bevel drive may be had if more clearance is desired. The position of the worm underneath its gear brings the rear axle casing lower than usual. The six-cylinder cars use bevel drive as standard. The 15-horsepower model finds extensive use in London as a taxicab, being found very satisfactory and economical in this service. This chassis, as well as the two-cylinder, also makes a good light delivery wagon, it has been discovered.

The Morse motor car is manufactured by the Easton Machine Co., South Boston, Mass., and is a valve-in-the-head, four-cylinder construction, the cylinders being individual castings with $4\frac{7}{8}$ -inch bore and 5-inch stroke. The car's make-up includes multiple-disk clutch, three-speed selective gearset, and 36 by 4 and $4\frac{1}{2}$ -inch tires in front and rear. The valves in the head are so caged that they may be removed and repaired at a moment's notice, and the mechanism, taking it as a whole, is of a substantial character, with means for taking up lost motion, excellent oiling facilities, and so designed that timing is accomplished with precision. The connecting rods are of I-section, and the journal brasses at the crankpin end are held in place by a four-bolt cap, with special steel bolt, castellated nuts, and cotter pins. The gudgeon pin and the pin itself is



KELLY-SPRINGFIELD DUAL TIRE

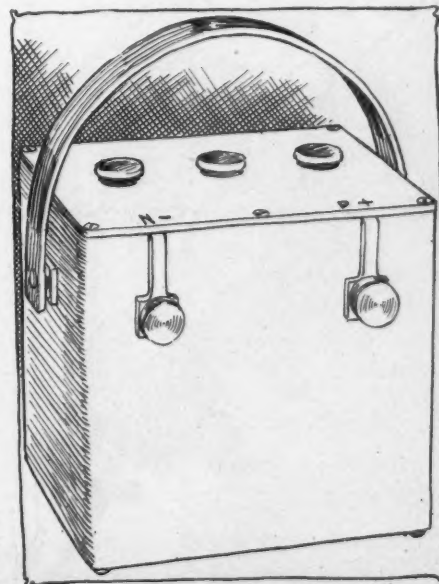


FIG. 2—HARVARD IGNITER

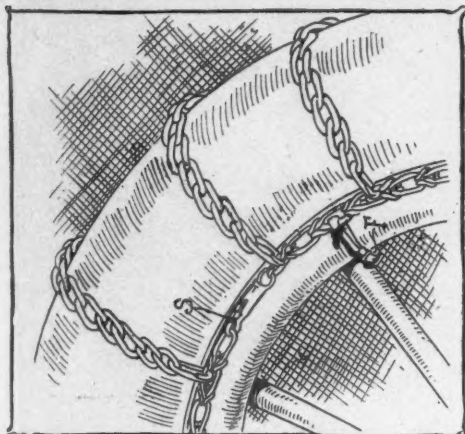


FIG. 3—THE COWARD ANTI-SKID

clamped into the connecting rod, and the bearings are in the bosses of the piston, which is of symmetrical design, and tightness is maintained by four packing rings which are ground to exact size and fitted with the utmost care. The oil sump in the bottom of the crankcase is flanged thereto, and by unbolting this bottom half, it is possible to inspect and clean the oiling system, also to take up on bearings, and if the occasion requires the pistons paired and replaced. The Stromberg carburetor is fastened to an intake manifold which is noted for its perfectly symmetrical T shape, and is so sized that popping in the carburetor and other troublesome performances are eliminated. Ignition involves the use of an Eisemann dual system, which, of course, includes a magneto and means whereby the ignition functions will be maintained, even though the magneto may become deranged. The fan in front is driven by a wide flat belt, is adjustable, and is rigidly supported on the top of the half-time gearcase. The crankshaft is of Krupp chrome nickel steel, forged under the hammer to give it its

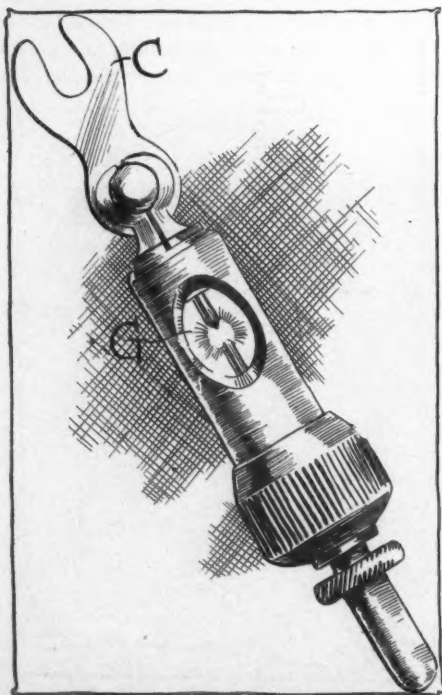


FIG. 5—PHELPS TROUBLE-FINDER

rough shape, and is then heat treated at the works of the Krupp company at Essen un Ruhr, after which it is finished to exact size, which involves final grinding. The clutch is of the multiple-disk type, comprises nine saw-steel disks which are submerged in oil, and present 800 square inches of surface. A coil spring exerts the requisite pressure, and the foot pedal offers a lever advantage by the ratio of 6 to 1, so that disengagement is as easy as engagement is positive. A means for adjustment is provided, and a double universal joint counteracts torque inequalities, so that the clutch offers the advantage of utility and low cost of maintenance to the owner.

The transmission is of the selective sliding gear type, with four speeds forward and one reverse. Three speeds ahead is on direct drive, through internal and external gear combinations, while the fourth speed is geared up so that on the fourth speed the main shaft in transmission revolves faster than the crankshaft. Hess-Bright ball bearings are used throughout and all members, including gears, pinions and shafts, are made of heat-treated Krupp chrome nickel steel. The steering gear is of the worm-and-sector type with a Morse cut. Every means is provided for adjustment; thrust-ball bearings take the strains, and the housing is grease-tight, with a means for feeding in grease as the occasion requires. The character of the workmanship throughout is consistent with the importance and nature of the service to be performed.

The chassis frame is of channel section, and in touring cars is 155 inches long. In the runabout type, however, it is reduced to 140 inches. The frame is so suspended with elliptic rear springs and half-elliptic front springs that it is 25 inches from the frame to the ground in front and 27½ inches between the same points at the rear. The live rear axle has a bevel reduction in the ratio of 14 to 47. The brakes are in 16-inch drums, with 2¼-inch shoe faces attached to the rear wheels, excepting the emergency brake, which has an 11-inch drum located on the differential shaft.

The Boston show has always been prolific in its exhibition of accessories, and this year the army of new devices is greater than ever. Motor Age describes on this and the following pages several devices not seen before on the show circuit. No reference is made to those accessories which were at the Chicago and New York shows and were described in the special show issues. New England is a hotbed of accessory manufacture, and each year witnesses a crop of new ones and the usual elimination of a few of the old ones.

Terminal Spark Gap—A device for determining ignition trouble exhibited is the Phelps trouble-finder, made by the Ney England Sales Co., Boston, illustrated in

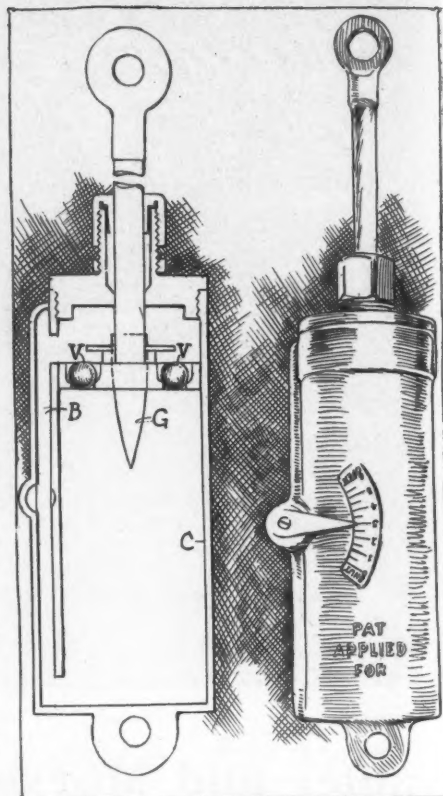


FIG. 4—BOSTON SHOCK ABSORBER

Fig. 5, and which is simply a glass-covered spark gap inserted in the line between the distributor and the spark plug. The spark takes place at the gap G so that by lifting the hood the driver is assured that if a spark occurs at this gap the current is passing to the spark plug. In attaching this device the gap G is made as small as possible and the connector C secured to the plug. The gap is widened to test in case of trouble.

Tire Chains—John D. Coward, Boston, Mass., is exhibiting a type of transverse tire chain in which there are several features. One of these is the split-link connecting each cross chain with the side chain, and by means of which a worn-out cross chain can be removed and a new one fitted without removing the chain from the wheel. Straps S are furnished which prevent the chains from creeping on the wheel. A simple form of snap link F, is used for securing the open ends of the side chain together.

Adjustable Reamer—The William J. Smith Co., Boston, manufactures the one-lock adjustable reamer, Fig. 6, by means of which adjustment is made within wide range

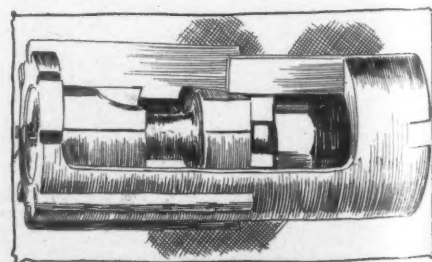


FIG. 6—SMITH ADJUSTABLE REAMER

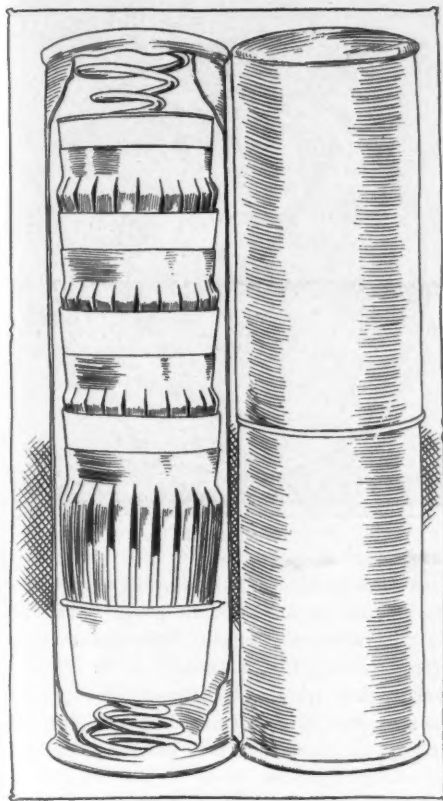


FIG. 7—BALDWIN TUMBLER-CARRIER

without recourse to grinding the cutting blades. The one-lock principle is made possible by a cam bolt on which the cutting blades bear solidly for their entire length. Turning the cam bolt in the shell of the reamer moves all of the blades at once and all the same amount. When the desired diameter from face to face of the cutting blades is obtained, a lock nut is tightened and the reamer is ready for use.

Individual Tumbler Carrier—A touring utility, shown by the Baldwin Mfg. Co., Boston, Mass., is the Baldwin tumbler-carrier, Fig. 7, which is a cylindrical nickel or brass case, leather covered, and containing a number of tumblers, each of which is held in place by a nickel spring holder. In the ends of the cylindrical case are coiled springs to prevent the tumblers being broken. The springs prevent the tumblers from contacting with one another and consequent breakage. A tumbler-carrier of this nature gives a separate one for each member of the party.

Boston Shock Absorber—In Fig. 4 is illustrated the exterior and interior of the Boston shock absorber, a product of the Knapp-Greenwood Co., Boston. The Bos-

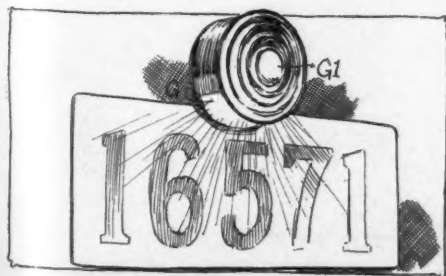


FIG. 9—COUCH TAIL LIGHT

ton is a hydraulic absorber in that the cylinder C is filled with a non-chill oil, used in order that the action of the absorber will not be interfered with because of cold weather. The operation is briefly as follows: The piston operating within the cylinder C carries a series of six ball check valves V, which act on the up-stroke of the piston, which would be the rebound on the car. A by-pass channel B is furnished through which the oil can pass from above the piston to beneath it on a rebound, and vice versa when the car drops into a depression. On a car dropping into a hole the piston goes downwards freely, the check valve allowing the oil a speedy transit from beneath the piston to above. Immediately, however, the piston starts upwards the closing of these valves restricts its progress and the shock-absorbing action begins, so that the upward travel of the piston depends solely on the speed with which the oil can travel through the by-pass. When the piston approaches the top it encounters a groove G which serves as a supplementary by-pass giving a partial release, which is claimed to be just sufficient to prevent any dragging on the spring when traveling over a series of small obstructions. This shock absorber is designed not to interfere in the slightest with the downward action of the spring, but to act solely on the recoil or rebound by the combination means referred to. Owing to the use of oil, stuffing boxes are provided. As shown on the exterior, an indicator is furnished which operates valve in the by-pass B, by means of which the action of the shock absorber can be adjusted to any weight of car. This concern also shows the Winestock spark plug, Fig. 16, a graphic representation of which shows the rapid demountability of the device, in that by a simple circular movement of the handle the main portion of the plug M, containing the electrode and the insulation, is freed from the socket S, which threads into the cylinder-head. By means of this demountability it is possible to remove the plug and see if it is sparking properly, by holding it in the air, without the necessity of unscrewing the socket. This plug is made in non-demountable style.

The Harvard Igniter—Manufactured by the American Storage Battery Co., the Harvard igniter, or storage battery, Fig. 2, is intended for regular motor car ignition work. These are made in 60 and 80-ampere-hour rate, and with voltages ranging from 4 to 8. These batteries are put up in wood or metal cases.

Combination Tail Lamp—The question of proper illumination of licensed tags on the back of a car has led to numerous inventions in which the lamp and number plate are one. One of these shown this week at Boston is manufactured by Couch & Seeley, Boston, Mass. It is illustrated in Figs. 9 and 10. The lamp has two purposes—that of a rear red signal through

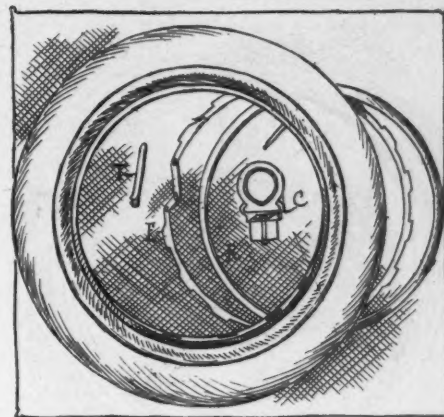


FIG. 8—JORDAN DEMOUNTABLE RIM

the lens G1 and throwing a white light through the crescent-shaped glass G over the face of the number plate N. The light is supported on a bracket at the back of the car and a number plate is clamped into a downward extension of the lamp bracket. Electricity is used, the current being taken from the regular ignition battery. Within the lamp is a 6-volt, 1/2-ampere Tantalum burner.

Lamp-Lighter—Hart & Fuller, of Hartford, Conn., have a new electric gas lamp lighter, which works without any source of current except that required for the ignition, and has no coil or other complications. The device is controlled by a switch, adapted to be placed under the overhang of the front seat, which short-circuits one of the cylinder spark plugs and diverts its current through the ignitors, resembling small spark plugs, placed across the gas burners. A gas valve is also provided.

Homo Mixture Mixer—The Gasoline Motor Efficiency Co., Jersey City, N. J., shows its Homo mixer. This is a revolving screen of coarse wire mesh constituting a ball-bearing fan and is inserted in the intake manifold between the carburetor

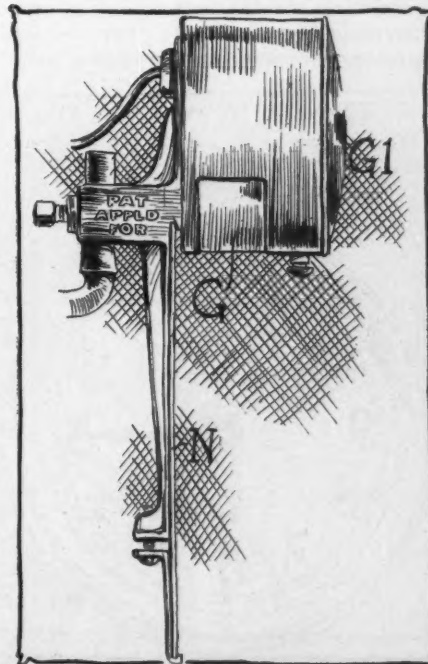


FIG. 10—COUCH TAIL LIGHT

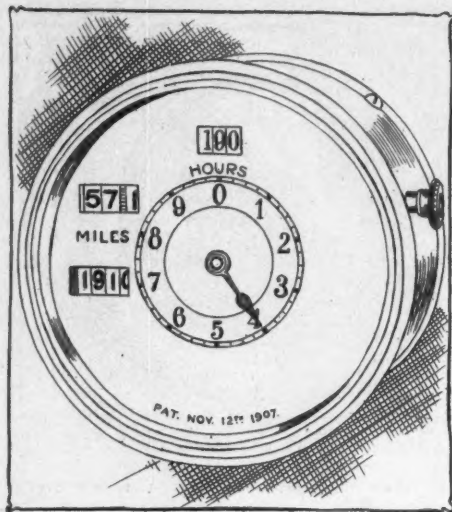


FIG. 11—CLEVELAND MOTOR TRUCK LOG

and the motor. The movement of the mixture causes the fan to rotate and it breaks up the particles of gasoline in suspension in the air, its object being to produce a more homogeneous mixture.

Standard Speedometer—The Standard speedometer is made by the Standard Thermometer Co., Boston, and is a centrifugal force instrument manufactured in the usual combination styles with clock attachments or otherwise. The construction of this speedometer is shown in Fig. 19, in which the weights W are shown in the rest position, but which weights are thrown outwards by the rotation of the shaft S, which is driven from the car. Each weight is carried on a disk with a series of teeth, which engage with the rack R and from which the amount of centrifugal movement is transmitted by bevel gears to the pointer, which operates over the face of the dials. This speedometer has the usual odometer for trip and season work incorporated within it. The main driveshaft S of the instrument is carried on ball bearings.

Cleveland Speedometers—Two devices exhibited by the Cleveland Speed Indi-



cator Co., Cleveland, O., are their speedometer, Fig. 12, for use on pleasure cars, and a motor truck log, Fig. 11, which is a device for recording the mileage on trucks. The Cleveland speedometer has a clock incorporated with it, so that starting the car starts the clock and stopping the car stops the clock, so that actual running time is shown. The running time for the season is shown in the dial at the 12-o'clock position. The instrument has a dial regulated up to 50 miles per hour, and on the left side are trip and season odometers. This speedometer is based on the escapement principle and not the centrifugal force principle usually employed. The motor truck log, Fig. 11, shows by the clock the exact time the truck has been in operation, the dial showing the number of hours it has been run, and the figures at the top showing the hours run in the season. To the left are the usual mile odometers. This log is not a speedometer, there being no speed-registering device on it.

Motor Car Lock—The Star Auto Locks, Boston, Mass., manufactures a lock, Fig. 1, which is designed to be applied to the emergency or ratchet brake levers on a car, making it impossible to set the car in motion, with the lock in place. The lock consists of clamps C and C1, which, after being positioned, as illustrated, are held in place by a Yale lock L. The lock is placed between the ratchet grip and the handle of the lever. The lock is designed to fill the space between the ratchet and handle grip on most cars; if, however, this space is unusually large or small, an adjustment would have to be made on the ratchet so as to accommodate the lock to the position.

Parker Motors—The Parker Motor Co., Hartford, Conn., shows its standard design of four-cylinder gasoline motor with $4\frac{1}{2}$ -

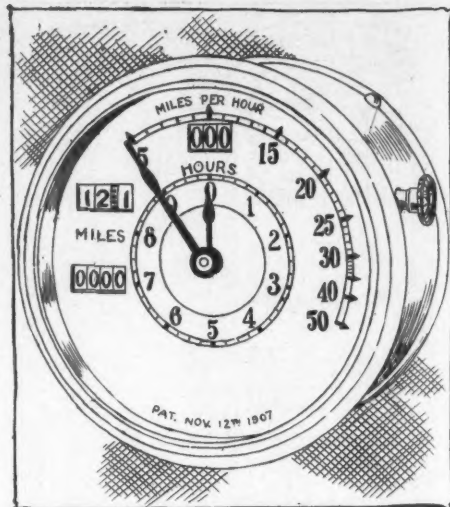


FIG. 12—CLEVELAND SPEEDOMETER

inch bore and 5-inch stroke. In this motor the cylinders are cast in pairs with the valves on the right side. The distribution of the various motor accessories is conventional, the pump and magneto being carried on one shaft at the left and the oil pump and timer on a vertical shaft between the cylinder pairs.

X-Tra Tread Tires—The Shawmut Tire Co., Boston, Mass., shows its X-Tra tread non-skid tire, the name being taken from the shape of the non-skid projections on the tread, these projections covering the entire surface of the tire, those on the center line being to prevent skidding, and those on the side walls used to secure traction in deep snow or mud. In addition, the company shows a line of wrapped tread shoes, tire tools, cements, etc.

Jordan Demountable Rim—R. W. Jordan, Boston, Mass., shows the Jordan demountable rim, illustrated in Fig. 8. The rim consists of a regular part carrying the tire, an expanding or locking rim E, tool T for operating the expanding rim R, a steel rim. The rim goes together on a bevel, the wedge teeth on the expanding rim E drawing it to a pressure fit as required.

Casgrain Speedometer—Couch & Seeley Co., Boston, Mass., show the Casgrain speedometer which was exhibited last year. This speedometer is built on the liquid-current-force principle, in which a quantity of liquid is confined in a cylinder without any means of escape. Paddles rotate in this liquid, revolving the liquid

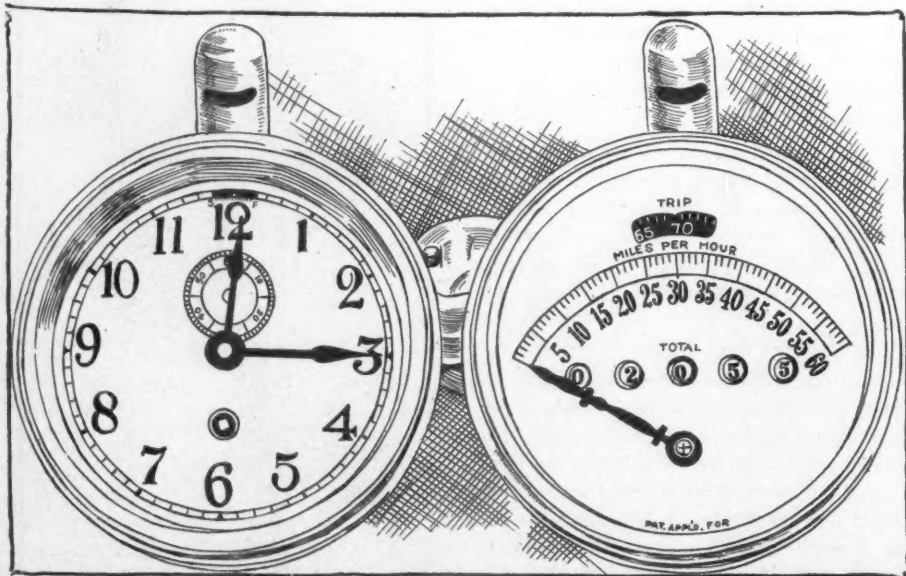


FIG. 13—STANDARD COMBINATION CLOCK AND SPEEDOMETER

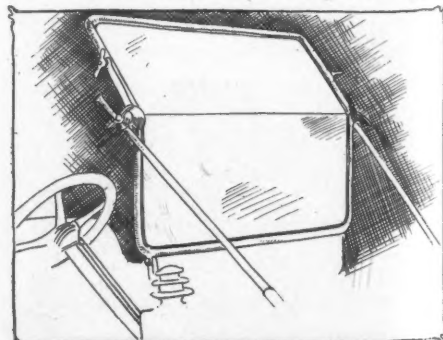


FIG. 14—AJAX WINDSHIELD

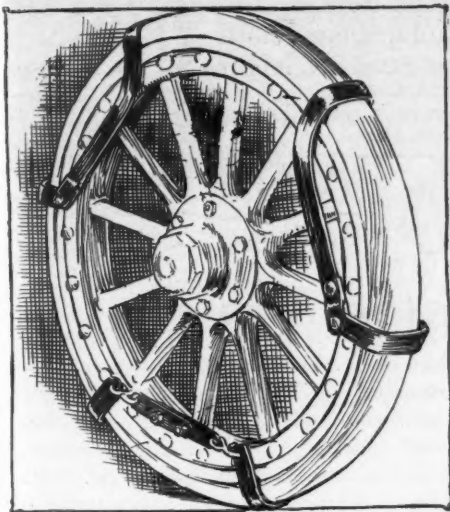


FIG. 15—LYON ANTI-SKID DEVICE

with them, creating a current force in proportion to the speed at which the paddles revolve. This current causes a friction or drag on other blades within the liquid, and to which blades the indicating dial is secured. The Casgrain is best described as being a liquid drag instrument.

Air Compressors—The Brunner Mfg. Co., Utica, N. Y., exhibits a complete line of air compressors for private and public garages, these designs being of the belt and motor-driven type. This concern manufactures all sizes of air-compressors, from the single cylinder type with a bore of 1 13/16 inch and a stroke of 2 1/2 inches to the large four-cylinder type of capacity for garage work. The motor-driven designs are equipped with 1/4-horsepower electric motors of different designs having one, two and four cylinders. These different compressors are designed to operate at different speeds, according to demands.

Factory Machinery—Chandler & Farquhar Co., Boston, show a line of machine tools, including high-speed radial drills, high-speed triple-gear plain radial drills, the Allen high-speed ball-bearing sensitive drill, and many other similar types of machines.

Electric Attachments—The Culver-Stearns Co., Worcester, Mass., shows its different lamp attachments for converting oil or acetylene lamps into electrics. The C-S oil attachment is a clamp designed to fit over an oil burner and carries hinged to it an electric bulb so that when in use

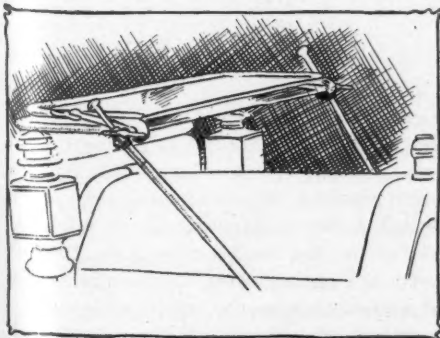


FIG. 17—AJAX WINDSHIELD



the bulb can be swung directly above the oil burner and when not in use it swings to the side of the lamp. The C-S parabolic attachment is an electric light with reflector which can be fitted into an acetylene headlight; the parabolic reflector with its 16-candlepower Tungsten bulb is readily attached.

Lyon Tire Grip—Lyon tire grips, manufactured by the Lyon Non-Skid Co., Philadelphia, Pa., are exhibited. The Lyon tire grip, Fig. 15, consists of what appears to be three metal stirrups which fit over the side of the tire, but instead of being three separate units they are one, the connection among them being on the inside of the wheel, and not appearing. The device has, as shown, six metal cross straps regularly placed around the tread. The grip device is in two principal parts, each consisting of one piece with one cross tread and another piece with two cross tread strips. These principal parts are joined by a riveted swinging connection, enabling them to be folded up for compact carrying. Hoops and plates are attached as illustrated to each end of the principal parts to form a bolt connection. In applying this non-skid device the final securing is accomplished by the bringing the plates together at the bottom by means of a tool furnished for this work. In these plates several holes are provided to permit of adjustments in case of wear on the tire. This tire chain is used for solid tires.

Reliance Speedometer—The Reliance Speedometer Co., Boston, shows its reliance instrument illustrated in Fig. 18, and which has a double dial, the outer one graduated to show the speed in miles per hour, and the inner one a 100-mile daily trip with fractions of miles shown. At the 6-o'clock position on the dial is

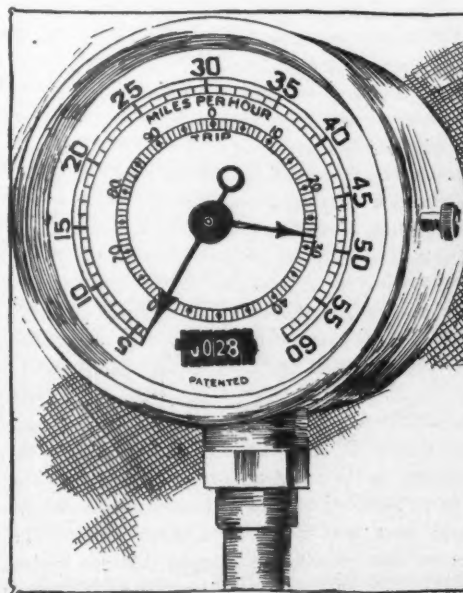


FIG. 18—RELIANCE SPEEDOMETER

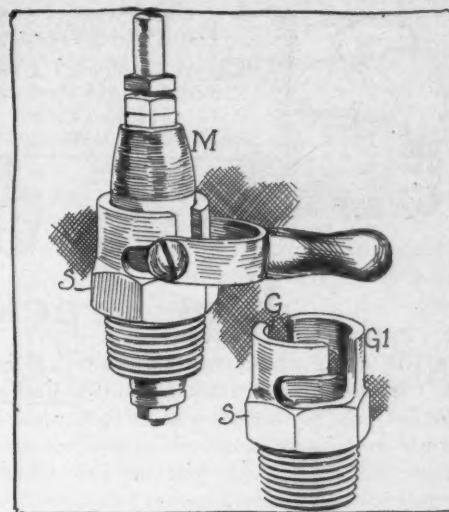


FIG. 16—WINESTOCK SPARK PLUG

the season odometer, which records up to 10,000 miles. A re-setting hand is furnished for the trip odometer so that it can be readily returned to zero.

Ajax Wind Shield—The Novelty Mfg. Co., Waterbury, Conn., manufactures an Ajax windshield, which is illustrated in two views, Figs. 14 and 17, the former showing the shield in what is known as the wind and dust position, in which the lower half of the shield is vertical and the top half slightly inclined to the rear. There is a slight opening between the glass in the halves of the shield, which is intended to avoid the strong side drafts of air. In the folded position the shield is in repose horizontally above the bonnet, the triangular brace rods telescoping in this position. All told, the shield may be placed in five positions to suit varying conditions, these positions not illustrated being rain, in which the halves incline rearward, leaving an open space between them; light dust, with the lower half horizontal and the upper half inclined rearward; and usual, with the lower half vertical and the upper half folded.

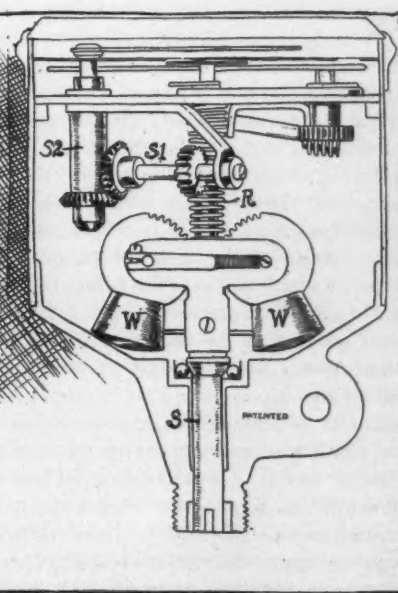


FIG. 19—STANDARD SPEEDOMETER

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Free Tracks For All—The Boston Show

NOT a little flurry has been caused in motor car factories and circles by the announcement a week ago that the licensed makers of Los Angeles wished to bar unlicensed cars from their track meets, and additional furore was created by a report that there was a possibility that the new 1-mile board track, recently constructed near Los Angeles, would be open only to licensed cars at the opening meet. The problem of licensed and unlicensed machines is a vital one at the present time, and unnecessary chaos would be added to the situation if anything in the nature of prohibiting unlicensed cars from meets of this nature were enacted. A ruling of this nature would stir the public as any monopolistic feature is sure to do. It would be a serious injury to the sport if a division of this nature were made. The public wants competition among all makes of cars, and the minute the licensed forces in any city start shutting out the unlicensed makes, that minute the latter start the cry that the licensed representatives are afraid of the unlicensed cars and have taken this means of avoiding them in open competition.

IT is not known what the policy of the American Automobile Association will be in the matter of licensing contests that are supposed to be limited only to licensed cars, but it is expected that the sanctioning body will not grant permits for contests where such rules will exist. The matter of meets solely for licensed cars will not progress very rapidly until the matter of licensed retail dealers' associations throughout the country reaches a more advanced stage than at the present time; then the matter will be generally in the hands of clubs as promoting organizations rather than trade associations, the club being the more popular body to promote such contests. Motor Age believes that scores of licensed makers would regret licensed meets, as it would be an injury to them in the matter of selling cars. There are many foemen worthy of their steel in the unlicensed field at the present day and the maker who is out for victory wants a whole victory and not a fraction of one.

NEW ENGLAND this week is en fete with what might justly be designated its national show, namely, the Boston exposition. It is questionable if there is any other section of the country which is more patriotic to its show than is this New England section. Since its inception, the New England states have stood solidly and undividedly for the Boston show, a fact which makes the show the valuable factor that it is today. So far as the city of Boston is concerned the show is a local one, but to the citizens of Maine and New Hampshire it is as important as either of the New York shows. The density of population throughout New England is to a large measure responsible for the selling status of the show. The unanimity of the different New England interests in regard to the Boston show constitutes an example that could be imitated to advantage in other states and divisions of this country. Where the show is patronized so generally by dealers from surrounding cities and states it is possible to have an exhibition of cars in every sense the equal of the national show; but, where each city of 100,000 or 200,000 wants its local show it is impossible to secure the number of exhibitors, so that in the end the prospective in such territories where three or more purely local shows are held have not had as good an opportunity of examining the product of the country as where one big local show is held, such as the Boston one. The Boston example is a good one to follow.

THE present season already gives evidence of widespread attention of the motor clubs throughout the country to the matter of good roads. A year ago, and in fact at the present time, many clubs consider it their only mission to promote contests. Others who have not been successful in this role have waged legal contests of one nature or another in the matter of favorable motor car legislation; and there have been a few who have actively taken up the work of securing good roads, but their numbers are few. The matter of good roads is naturally more a question of state associations than one of local clubs, but it is impossible for any state organization to push this work along without the active assistance of the different clubs constituting the association. The need of good roads activity on the part of many clubs is urgent. In many cities the worst roads are in the suburbs and before the country is reached; in some large cities it is almost impossible to reach the country highways without traversing streets of the worst variety. This condition offers a particularly urgent field for clubs and they should take this work up actively at the present season. The first step in this program should be the appointment of a good roads committee, which committee should get closely in touch with the proper road authorities. Once the attention of these authorities has been brought to the condition it calls for numbers to bring results, and in this regard it would be difficult for any small club of 50 or 100 members to produce results. The clubs that can hope to accomplish something are those whose membership reaches into the hundreds or perhaps thousands. With the vast increase in the number of cars that will be used in 1910, there is great scope for doubling and trebling the club membership, and this should be looked to, because numbers will count when the question of securing appropriations from the legislature or other governing body comes up for attention.

AWORK which the local clubs can take up to advantage is the erecting suitable signboards marking the leading routes from the different sides of the cities or towns. The erecting of signboards should be looked after by the state, and several states have statutes covering such, but still the signboards are not erected. It is agreed that it is dangerous for any organization to take up the work that the state by virtue of statute should perform, but if the motorists can by erecting signboards along certain routes bring the attention of all motorists of the state to the matter, it will result in securing state coöperation in this work earlier than if the matter were left alone entirely. Motor clubs throughout the country have spent vast sums in this work, and in too few cases have the clubs directed their energies towards securing state coöperation, so that their own work serves merely as an example to the state.

THE commercial vehicle is attracting more attention at present than it has done for some time. Several large makers are working on new models and there has been a big addition to the small car field. The present wave of uneasiness has to an extent been responsible for this, not a few makers seeing the safety of developing the commercial line, in case the pleasure demand should suddenly wane. The new trucks in many cases are not the mature types that are desired, but several of them are largely experimental in many respects, so that after a year of service not a few of them will have to be redesigned.

MORGAN SPENDS MILLIONS FOR CAR PLANTS

NEW YORK, March 9—Special telegram —J. P. Morgan & Co. have become interested in the motor car industry, and today, following the announcement that the big financial concern had bought into the Everitt-Metzger-Flanders company, of Detroit, came the rumor, apparently well authenticated, that Mr. Morgan is involved in a gigantic deal which involves the newly incorporated United States Motor Co., which controls the Maxwell and Columbia plants. This rumor spread among the tradesmen today, and that it has some foundation is apparent by the glaring headlines with which the daily papers have played up the story.

There is no doubt about the E-M-F transaction. Morgan & Co. yesterday closed that deal and secured all of the stock in the concern that is not controlled by the Studebakers. In doing so it has brought to an end the costly litigation that has been going on between the two interests. Mr. Morgan states authoritatively that this litigation now will cease. Also he announces that Walter E. Flanders will continue as president and general manager

Financier Buys E-M-F Interests and Is Said to Be Involved in Deal for the United States Motor Co. Holdings

of the company for the next 3 years. As to further details the financier will not say. It is said the E-M-F holdings cost Morgan \$4,800,000, but advices from Detroit this afternoon makes that sum look small. The Detroit dispatch would seem to conflict with the Morgan statement, for it says the financier has bought the entire plant and stockholdings of the E-M-F company and that he paid \$6,000,000 for the interest. This dispatch, quoting the Detroit News, says:

"A deal of immense importance in the motoring world and one which promises to add much to Detroit's industrial advancement was closed yesterday in New York, when the entire plant and stockholdings of the E-M-F company were transferred to J. P. Morgan & Co. The price paid was \$6,000,000, it is said. J. P. Book, vice-president of the E-M-F company, says

that the property alone ultimately will be capitalized at \$30,000,000 to \$50,000,000. 'It is true that the stockholders of the E-M-F. company have sold to Mr. Morgan,' said Vice-President Book."

Regarding the deal, Morgan & Co. this afternoon issued the following statement:

"Pursuant to an arrangement with stockholders of the Studebaker Brothers Mfg. Co., J. P. Morgan & Co. have purchased substantially all of the stock of the Everitt-Metzger-Flanders Co., of Detroit, not already held by stockholders of the Studebaker Brothers Mfg. Co. In connection with the purchase, a contract has been entered into with Walter E. Flanders to continue as president and general manager of the Everitt-Metzger-Flanders Co. for 3 years. As a part of the transaction the litigation pending at Detroit is terminated."

As for the other deal, which involves the United States Motor Co., nothing official can be obtained at the present time, but the belief is that there is something in it because of the excitement that prevails in financial circles.

COAST ROAD MEN MEET

Aberdeen, Wash., March 4—With more than 600 delegates in attendance, the annual meeting of the Washington Good Roads' Association convened at the Grand theater for 2 days. Opposition to the granting of franchises to interurban railways or other railways for use of county or state roads was the keynote of the morning session, and in addition to this fight on the present state aid road law, and on the proposal to build trunk lines, were the features of the meeting.

John Hartman, of Seattle, was unalterably, forcibly opposed first, last and all the time to granting of franchises over or along county roads. "If the people who want these interurban franchises don't know what their own interests are, let the citizenship of this state arise and tell them," declared Mr. Hartman. In reply to a question, Mr. Hartman declared that, in his judgment, the placing of high-power transmission lines along county highways was as much a menace to the public as railways themselves and should not be permitted.

Eli Rockey, of Pacific county, dwelt particularly on the careless manner in which road-building had been carried on in this state in the past, but congratulated the people upon the fact that better and more substantial methods were now in use. Governor M. E. Hay addressed the convention as "gentlemen and fellow laborers on the highways of Washington," and gave a short talk.

State Senator W. H. Paulhamus, acting as chairman for the afternoon session introduced Governor Hay as the "best gov-

ernor we ever had." The speaker stated that there were four primary questions for discussion at this convention, according to his idea. They were, he said: First, how shall the funds for the building of roads be raised? Second, with the money raised, how shall it be expended? Third, the kind of roads to be constructed. Fourth, who is to have charge of the expenditure of the money and the building of the roads?

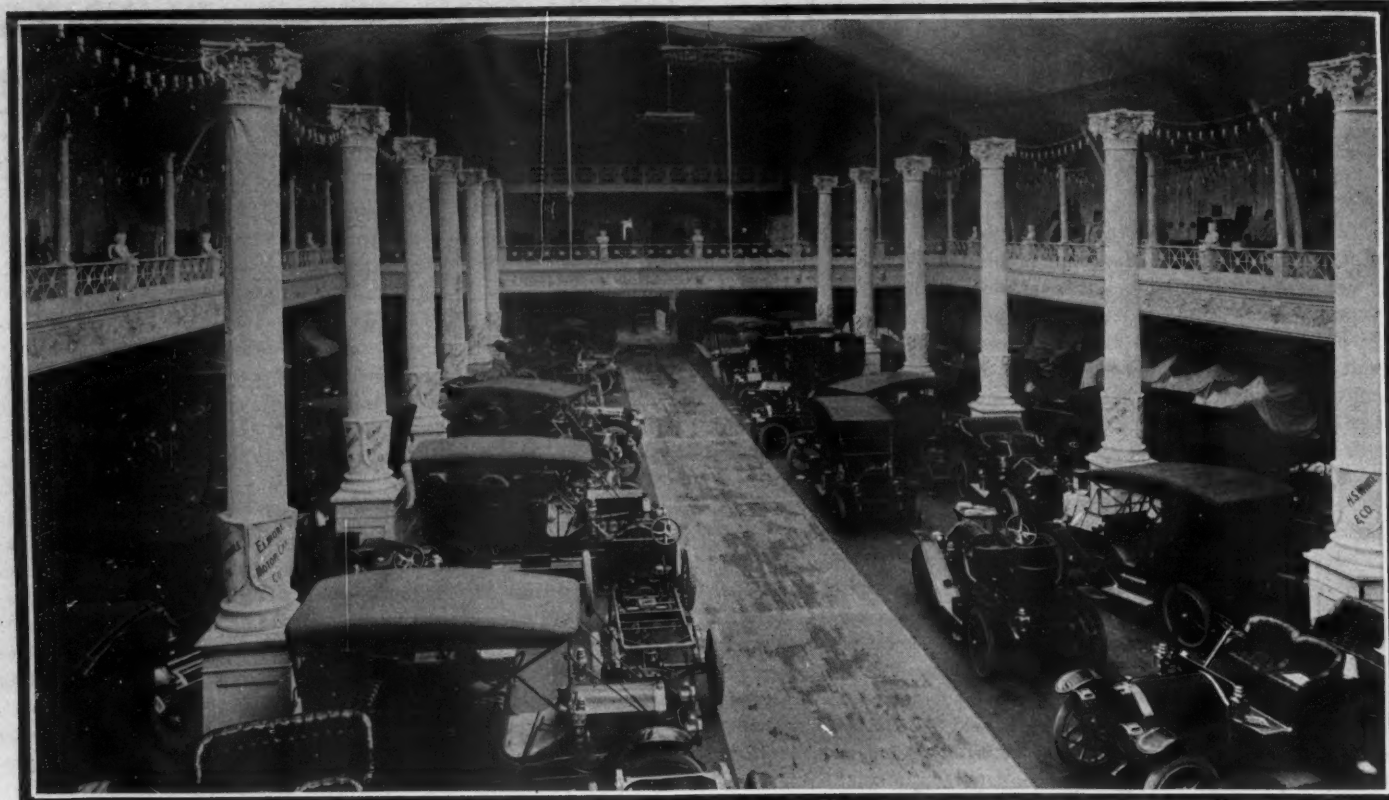
In closing, the governor gave a short review of convict labor on the state highways, and suggested that after a convict's minimum sentence had expired he should be put to work on the state roads for 6 months; the first 3 months he should receive \$15 per month and for the last 3 months \$20 a month, and contended that this would permit him to leave with \$100 in his pockets.

Election of officers for the ensuing year was the principal item of business transacted the second day. The report recommended the following officers for the coming year: For president, John C. Lawrence, of Garfield county; first vice-president, J. J. Donovan, of Whatcom county; second vice-president, H. C. McGowan, of Pacific county; third vice-president, H. H. McLean, of Walla Walla county; fourth vice-president, W. H. Paulhamus, of Pierce county; fifth vice-president, B. H. Kennedy, of Douglas county; secretary, L. Frank Brown; treasurer, W. T. Clark, of Chelans county; chairman of the legislative committee, Judge Frank Whitson, of Spokane county.

CORBIN BREAKS A RECORD

Los Angeles, Cal., March 7—Special telegram—The Los Angeles Motor Racing Association heeded the warning of Chairman Butler of the contest board of the A. A. A. and its meet at Ascot park yesterday and Saturday was open to all cars, whether or not they were licensed or unlicensed. The result of this act cut down the entry list to a certain extent but the racing was spirited notwithstanding, and resulted in one record being broken, Al Livingstone in a Corbin reducing Burman's 50-mile mark to 50:26 1-5. In this race he defeated Ray Harroun and Joe Matson in Marmons, Frank Free in a Ford, Odell in a Pennsylvania, Edecott in a Cole, and Seibel in a Sterling. Livingstone drove the first 20 miles in 20 minutes flat, and beat Harroun 1/2 mile in the half-century. In Saturday's racing Livingstone also won the 25-mile race and the 5-mile handicap, traveling the 25 miles in 25:56. Harroun won two 5-mile races and one 10-mile yesterday.

Originally the Ascot Park meet had been divided with 1 day open to all cars and the other restricted to licensed machines. News of this proposed action reached Chairman Butler, who at once wired Manager Hempel that all meets would have to be open or a sanction would not be granted by the A. A. A. Manager Hempel decided to comply with this command, but when the matter was placed before the local licensed dealers' association, the members of that body decided to withdraw all their cars and refused to race at the meet if unlicensed cars were permitted to contest.

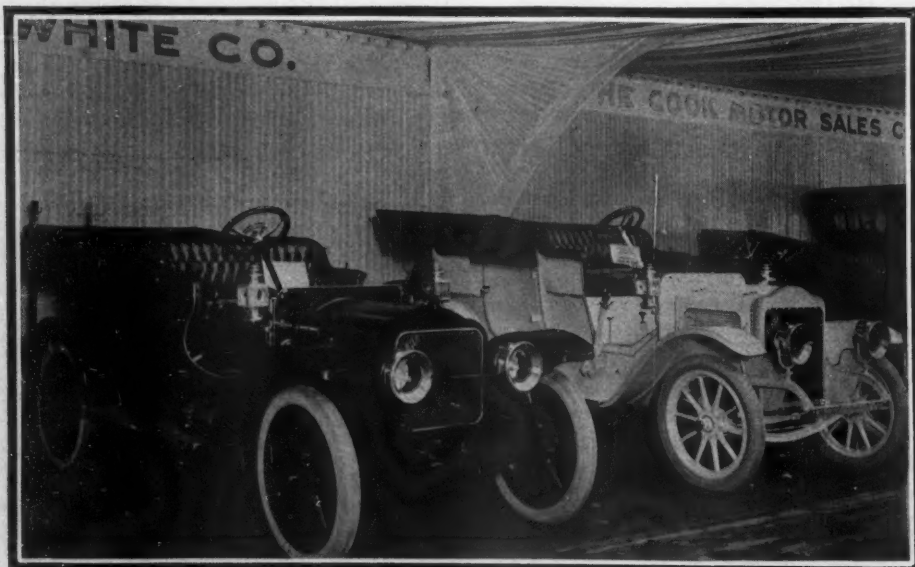


MAIN AISLE AT CLEVELAND'S SHOW THIS WEEK

Cleveland's Second Big Motor Show

CLEVELAND, O., March 5—Only two weeks after the close of the first motor car show, given in the Central armory of this city this year, the eighth annual show of the Cleveland Automobile Club and dealers' committee was thrown open to the public in a formal manner this evening, when Mayor Baehner touched the button and flooded the building with light. With a section of the balcony, as well as the main floor, devoted to the exhibition of 155 of 1910 style motor cars, representing sixty

manufacturers, and as much of the remaining portion of the balcony as could be spared allotted to thirty-one dealers in accessories, the greatest and most representative demonstration of its kind ever presented to the motoring enthusiasts in Cleveland is being given. The classes of cars range from the cheapest to the costliest types; there are cars selling as low as \$500, others at \$800, \$900, \$1,000, \$2,000 and all the way up to \$7,000. The type of car that predominates, however, is the one of the medium price, the great-



WHITE GASOLINE AND STEAM CARS ARE SIDE BY SIDE

CAR EXHIBITORS

Rambler Automobile Co.,
Rambler.

Babcock Electric Garage &
Sales Co., Babcock.

Weddell House Garage,
Inter-State, Holsman.

Studebaker Automobile Co.,
Studebaker.

Brandt Motor Car Co.,
Kisselkar.

Broc Carriage and Wagon
Co., Broc.

Olds-Oakland Co., Oak-
land, Oldsmobile.

Maxwell-Briscoe Cleveland
Co., Maxwell.

Charles B. Shanks Co.,
Chalmers, Hudson.

Cook Motor Sales Co., Reo,
Premier.

Garford Motor Truck Co.,
Garford truck.

Sebring Motor Car Co.,
Sebring Six.

Crest Motor Car Co.,
Paige - Detroit, Abbott - De-
troit.

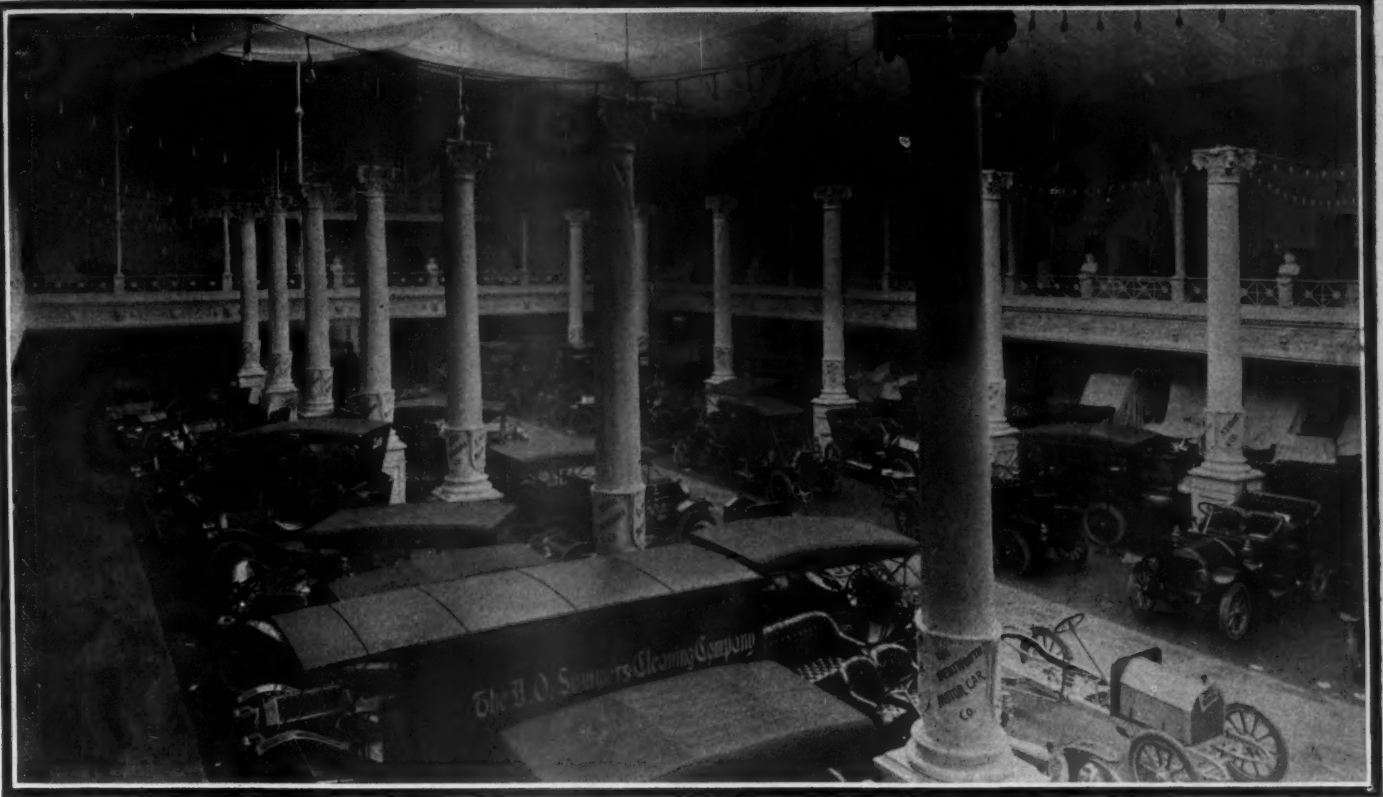
Auto Shop Co., Thomas.

Western Reserve Motor
Car Co., Pierce-Arrow, Ap-
person, Everitt, Hewitt
truck, Woods electric.

Auto Sales Co., Velle,
Hupmobile.

Crawford Motor Co., Jack-
son, Rider-Lewis, Fuller,
Stearns.

Bulck Motor Co., Welch,
Buick.



THE CORINTHIAN COLUMNS ARE FEATURE DECORATIONS

CAR EXHIBITORS

Park Motor Car Co.,
Speedwell.

H. S. White & Co., Pierce-
Racine.

Overland Motor Car Co.,
Overland, Marlon.

Regal Motor Sales Co.,
Regal.

Barger Automobile Co.,
Cadillac.

Aplebaum Brothers, De-
troit electric.

Franklin Automobile Co.,
Franklin.

Mitchell Brothers Co.,
Ohio.

Elmore Motor Car Co.,
Elmore.

J. H. Greenwald, Marmon,
Moon.

Wentworth Motor Car Co.,
Mora.

V. R. Hall Auto Co., Car-
tercar, Plymouth.

Lucas & Christenson, Mit-
chell.

Pullman Motor Car Co.,
Pullman.

Forest City Motor Car Co.,
Jewel.

Gabriel Carriage and
Wagon Co., Gabriel, Krit,
International.

Haynes Auto Agency,
Haynes.

Black & Co., Black Crow.

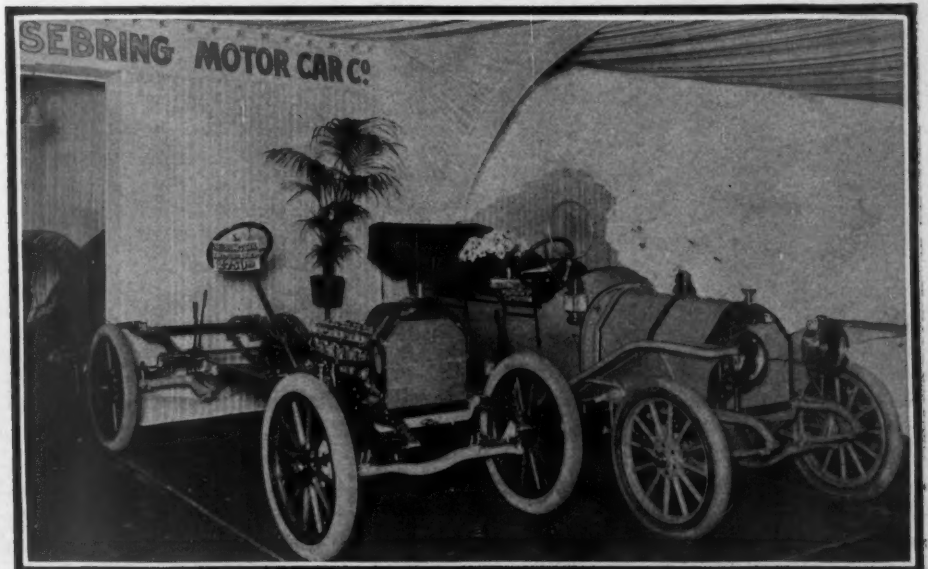
Crawford Motor Co., Fuller,
Ewing, Taxicab.

Several New Cars Are On Display

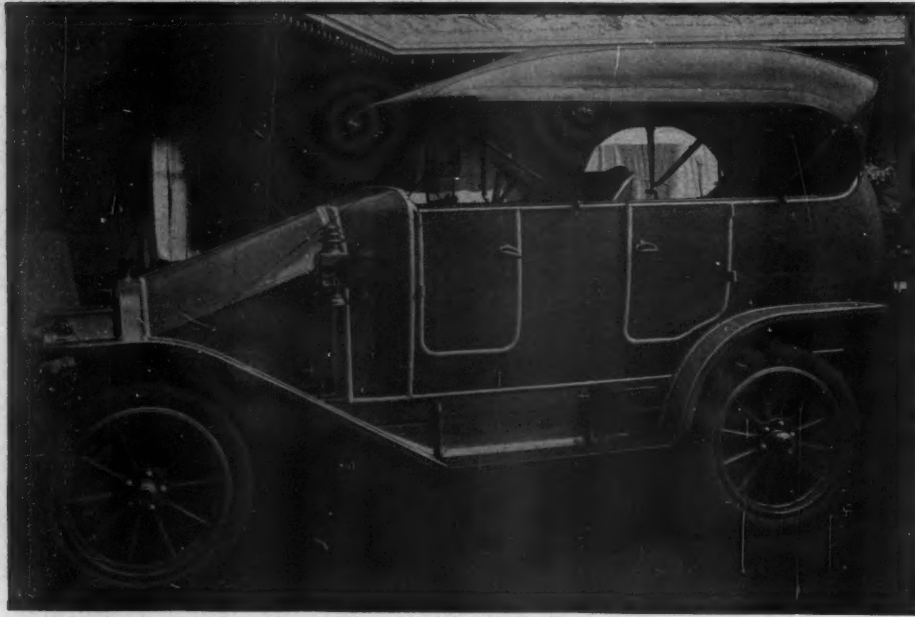
est number averaging around \$2,000 or a trifle less.

The decorative scheme resembles the interior of a Grecian palace and the neatness and delicate simplicity of it all is indeed commendable. Except for the green burlap on the floor and a few touches of green on the staircases the trimmings are all in white. The ceiling has been covered by a single piece of pure white canvas. The walls and stairways have been hidden with fluted white cloth. The height of the beauty of the deco-

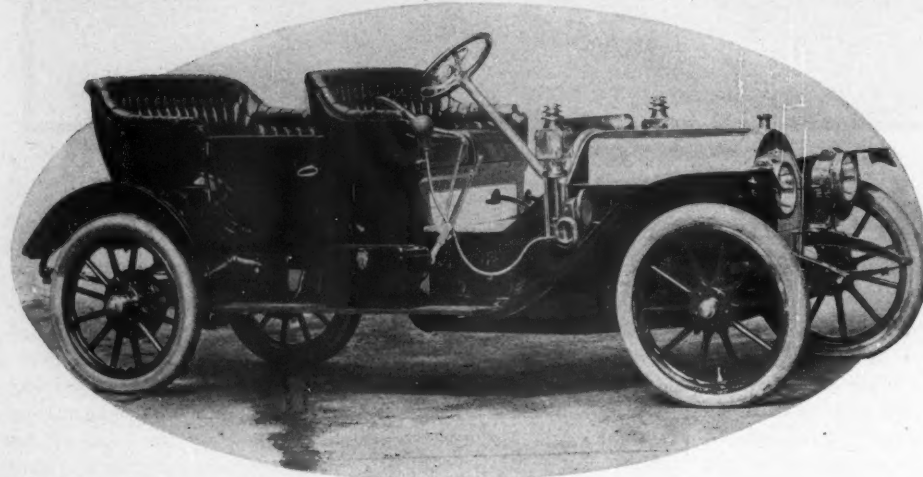
rative scheme is found in the arrangement of the balcony and the double row of seven Corinthian columns stretching down each side of the main floor. The balcony has been extended and a handsome railing built around it. Around the base of the railing extends a Grecian frieze work of artistic designs done in plaster of paris. At short intervals white columns, extending to the ceiling, break through the railing, and midway between the columns on the balcony plaster of paris busts, emblematic of the show—a girl in motoring



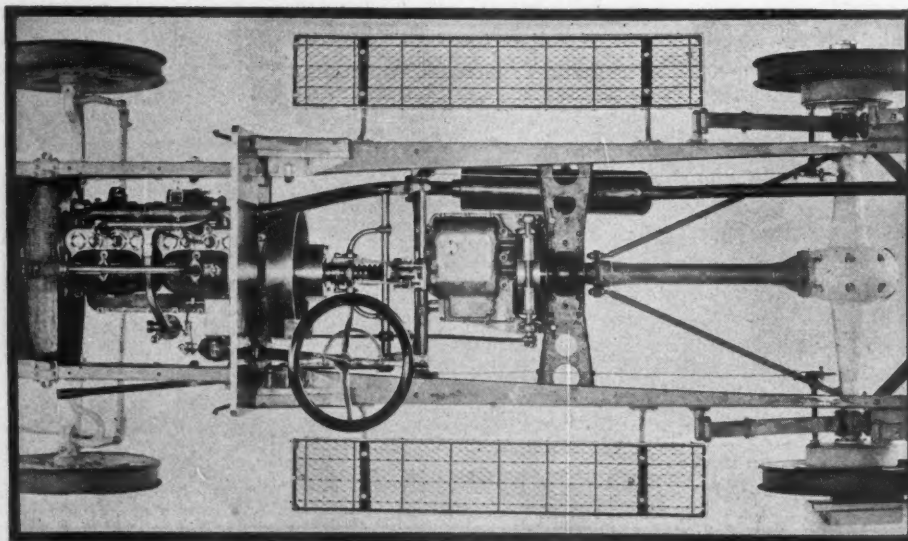
SEBRING TORPEDO AND STOCK CHASSIS AT SHOW



CADILLAC TORPEDO CAR SEEN AT CLEVELAND



THE GABRIEL IS A FOUR-CYLINDER MOTOR CAR



CHASSIS OF EWING FOUR-CYLINDER TAXICAB

costume at the steering wheel of the motor car—are arranged. These busts represent a popular Cleveland motorist, and a prize of \$100 is offered to the first to guess her name.

The lighting scheme is simple and effective. The balcony, side walls and the columns are outlined with incandescent strings of lights stretching from column to column. Over the bandstand, at each

end of the armory, two large sunbursts have been erected, and from the ceiling suspend three huge clusters of lights arranged in the shape of motor car wheels. Owing to the fact that there is no building in Cleveland at the present time large enough for a satisfactory display of all the cars to be shown, two shows are almost an absolute necessity. It is possible that similar arrangements will be made in years to come until a large building is erected. Cleveland itself is one of the motor car manufacturing marks of the world, as several of the most prominent American cars are made here, and it is possible that one show will be devoted chiefly to the exhibition of home products and the other or a more national scope we might say.

New Cars Are Shown

Five new exhibits are brought to light at the Cleveland show which never have been exhibited at any of the previous shows given throughout the country this year. These comprise four types of Broc electrics, a Ewing taxicab, a Gabriel touring car, the Plymouth truck, the Garford truck and the chassis and a torpedo touring type of the Sebring Six.

The Broc electrics, manufactured by the Broc Carriage Co., of Cleveland, O., are made in four body types, including a stanhope, a straight-front coupe, an extension front coupe and a runabout, all of which are luxuriously equipped and embodying perhaps every device known to motordom for the improvement of electrically-propelled vehicles. Except for the runabout, which is longer, the wheelbase of these cars is 80 inches, with a 50-inch tread, and 32 by 3½-inch Palmer pneumatic tires. The motor, which is series-wound, rated at 2 horsepower, with an overload capacity of 300 per cent, is suspended between the side members of the pressed channel steel frame and receives its current from twenty-eight or thirty cells of 11 M. V. Exide batteries, which are equally arranged under the hood in front and the rear deck. Transmission from the motor to the jackshaft is by silent chain reduction and side chains to the rear wheels. Control is by means of an inside type of hinged side-lever steering gear, a continuous torque controller, giving five speed changes forward and reverse without resistance, and a controller brake and internal expanding hub brake operated by a pedal. Revolving parts are mounted on imported ball bearings, semi-front and elliptic rear springs are used, safety appliances are provided for protection of theft or unintentional starting, and the construction, upholstery, fittings and other distinctive features are the results of careful consideration and experience.

Gabriel Touring Car

The Gabriel touring car, which makes its debut at the Cleveland show, is a product of this city, manufactured by the

Gabriel Carriage Co. Its principal characteristics are a four-cylinder four-cycle L-type water-cooled motor, a selective sliding gearset, located amidships on a sub-frame with the motor; straight-line drive to the floating rear axle, with the driveshaft inclosed in a torsion tube; semi-front and three-quarter elliptic springs, 120-inch wheelbase and wheels equipped with 34 by 4-inch tires. The motor is a standard type, rated at 25-30 horsepower, of simple design, and all fittings are carefully arranged and easily accessible. The cylinders have a $4\frac{1}{4}$ -inch bore and a $4\frac{1}{2}$ -inch stroke and are cast in pairs with integral waterjackets and valve chambers. The valves are all on the same side and mechanically operated, through adjustable lifters, from a single camshaft contained within the crankshaft.

The crankcase is a cast aluminum alloy divided horizontally; the upper section, which forms the base of the engine, is mounted at three points on the sub-frame and contains the three main bearings of the crankshaft, and the lower portion, which may be readily removed for the inspection or adjustment of rods, etc., forms an oil well for the circulating splash lubrication system. Cooling is by means of water circulation, maintained by a centrifugal pump, with a Mercedes type of cellular radiator, and an adjustable belt-driven fan as important features.

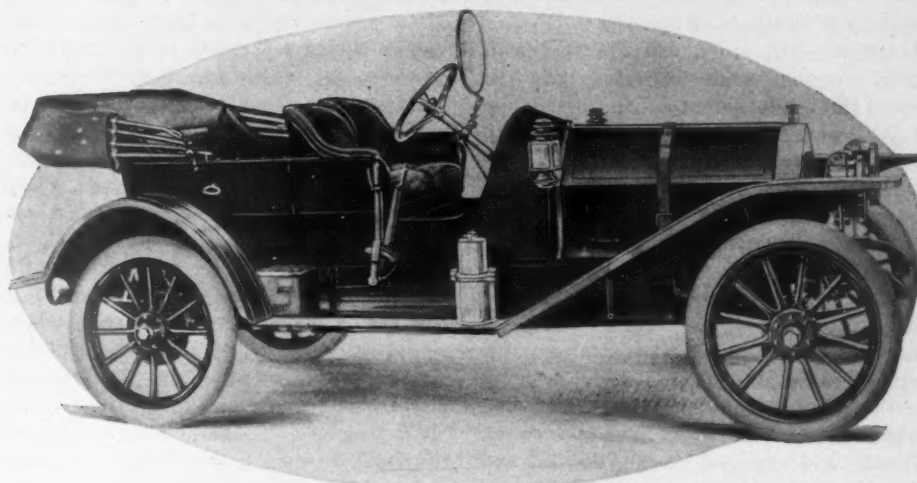
Wiring on the Gabriel

Ignition is by means of a single jump-spark system, with the current obtained from a Bosch high-tension magneto, and the secondary wires are conducted to the plugs through an insulated metal tube, which thoroughly prevents them from coming in contact with heated portions of the motor. The water pump and magneto are mounted on the left side of the motor and driven from the same gear, which, with the other engine gears, is enclosed in an oil-tight case at the front end. Two flexible couplings are employed between the pump and magneto. To further facilitate assembly or adjustment, the inlet and exhaust piping, which is on the right, is readily removable and designed with the exhaust arched over the intake to give easy access to valves and carburetor. A Stromberg carburetor is used, and a water and dirt trap is fitted into the gasoline line near the carburetor to protect it from any impurities in the fuel. Transmission from the motor to the rear axle is through a leather-faced cone clutch, a compact little gearset giving three forward speeds, with its main and countershaft in the same vertical plane, and mounted on adjustable Timken roller bearings, and an inclosed drive shaft with but one universal joint just behind the gearset.

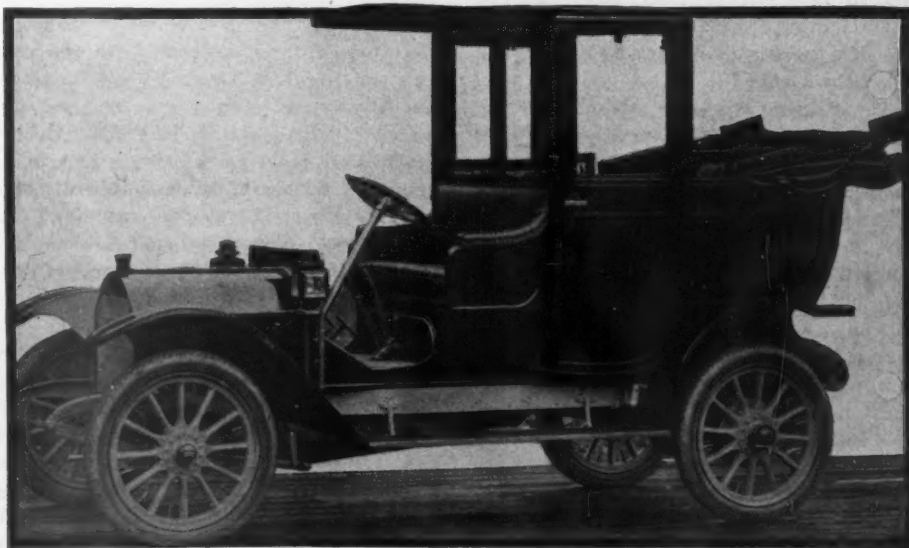
The steel torsion tube incloses the propellershaft and is securely attached at the end to the cone-and-cup ball bearing housing, which in turn is bolted to the



BROC ELECTRIC ROADSTER ON EXHIBITION



SEBRING FOUR-PASSENGER CAR AT CLEVELAND



EWING TAXICAB AT CLEVELAND SHOW

differential housing of the rear axle, and at the forward end it is attached to the Hyatt roller bearing housing, which in turn is tightly held by a cylindrical slip-joint torque housing. A spherical ring

on this end of the torque housing, closely fitted into a similar case, which is attached to the cross member of the frame, takes all torsional strain and renders the car very flexible. The rear axle is of the



BROC ELECTRIC CARRIAGE



THE JEWEL GASOLINE VEHICLE

conventional design of the semi-floating type and equipped with adjustable ball bearings. The front axle is an I-beam drop forging, whose steering knuckles have plain side thrust bearings and also a large single ball at the top of each for end thrust. The steering gear is of the stationary nut, worm and crank travel type, having large bearing surfaces and positive adjustment. Through ingenious arrangement of the various parts the gear is so-called irreversible and easy to operate. The frame is of pressed steel channel section, with the driving strains transmitted to it through the springs. Control is conventional, with the spark and throttle levers over the steering wheel, clutch and service brake pedals, and change gear and emergency brake levers at the right of the driver's seat. Brakes are of the internal and external type, operating on the rear wheel drums, which are of generous diameter.

The Sebring Six

The Sebring Six is a car of four-passenger capacity, with a unit power plant comprising a six-cylinder, vertical, water-cooled, valve-in-the-head motor, multiple disk clutch and sliding gear transmission. The power plant has a three-point suspension and transmits its power to the rear axle through a shaft contained in a torsion tube. Its other characteristic features are a front axle of I-beam section, 122-inch wheelbase, semi-front, three-quarter scroll elliptic rear springs and 36 by 4-inch tires. The Sebring motor is of the six-cylinder four-cycle type, 3 9-16 bore by 4-inch stroke. Cylinders are cast in pairs with waterjackets and valve chambers integral. Exhaust manifold, pistons and piston rings are made from specially adapted grey iron. The pistons and cylinders are carefully ground and polished and fitted with four ground rings to insure perfect compression in the cylinders. Inlet and exhaust valves are located in the heads of the cylinders and are mechan-

ically operated from noiseless rocker arms driven by a single camshaft inclosed within the motor's crankcase.

All motor gears are inclosed in oil-tight extensions of the crankcase to insure long life and silent running. Each valve can be easily lifted from its position by the release of one bolt. The crankshaft is drop forged and ground and runs on four large bearings. All bearing surfaces are ground and bushed with Parson's white brass. The crankcase is cast of aluminum alloy in three horizontal sections. The uppermost section forms the engine base and is supported directly by three-point suspension to the main frame of the car. The crankshaft bearings are held between the uppermost and middle sections. The bottom section is an oil reservoir and can be removed easily for inspection. The flywheel is on the front of the engine, which balances the drag of the transmission in the rear and equalizes the strain on all bearings. The three-speed sliding gear transmission is selectively operated. As the flywheel is placed in front of the motor, the aluminum transmission case is bolted directly to the motor crankcase, bringing the whole power plant into a single compact, rigid unit. The rocker support of the three-point suspension is at the rear of the transmission case. The multiple-disk clutch has twenty-nine steel disks and is inclosed in the transmission case and runs in oil. This clutch can be slipped in quickly without jerking the car. It is compact and accessible and light and small in diameter. The gears are machined from solid blanks of nickel steel and are locked in mesh while the clutch is engaged, so that it is impossible to strip them by attempting to shift without releasing the clutch.

Features of the Frame

The chassis frame is of channeled pressed steel, inswept at the engine and raised 3 inches in the rear, giving ample

room for the rise and fall over the rear axle. The springs all are of vanadium steel, suspended, as is the engine and all other supports, from the frame by hangers of manganese bronze. The rear axle is of the full floating type, with stationary sleeves of steel tubing pressed into and riveted within flanged collars bolted to the differential housing. The bevel gear and pinion are steel and of ample dimensions and strength. The propeller shaft is of 2-inch drop, so that when the car is loaded there is a direct straight line drive. All four brakes act on the rear wheel brake drums. The external contracting brakes operate by a pedal for service use; internal expanding brakes operate by an emergency hand lever, and a drum disk entirely incloses and protects each internal brake.

Ewing Taxicab

Devoting its entire effort to the production of a taxicab, the aim of the Ewing Automobile Co., Geneva, O., is to construct a car of strength and durability, with extra strong steering mechanism, rigid frame and simple motor, and of sufficient power, so designed and assembled that the various units might be removed and replaced with the least possible delay and labor. The chief characteristics of this car are a four-cylinder water-cooled vertical L-type motor, multiple-disk clutch, selective sliding gear transmission, located amidships, shaft drive, with the shaft inclosed in a torsion tube, floating rear axle, semi-elliptic front and three-quarter scroll elliptic rear springs, 32 by 4-inch tires, and left-hand control; that is, with the steering wheel on the left side, but with the change gear and emergency brake levers coming through the center of the footboard. The motor cylinders are cast in pairs, with integral waterjackets and valve chambers, and have a bore and stroke of 3 7/8 and 4 1/4 inches respectively. These rest on an aluminum crankcase, which is divided



GARFORD FRICTION-DRIVEN TRUCK



PLYMOUTH FRICTION-DRIVEN TRUCK

horizontally, the upper section forming the engine base, and containing the three bearings of the crankshaft; and the lower section forming the oil reservoir of the circulating lubrication system. The upper section is supported at two points in the rear and at one point in front, bringing about the desired three-point suspension. The valves are all on one side and mechanically operated from a single camshaft with integral cams contained within the crank chamber.

A glance at the motor is sufficient to show that the arrangement of the fittings has been given careful consideration. The carburetor is located on the left side of the motor, where it is most accessible, and its control mechanism simple and direct. The intake pipe extends up over and between the two cylinder castings and branches out over the valve chambers in a manner which renders its attachment or detachment comparatively simple. The exhaust pipe is also of simple construction and so placed as to give easy access to the valves. The water pump and the magneto are both arranged on the right side of the motor, and driven through flexible shaft connections directly from the same gear, which is inclosed with the rest of the engine gears in an oil-tight compartment in the front end of the motor. A short rubber hose connection is used between the pump and the inlet water pipe which conducts the water from the pump directly to the under side of the valve chambers, so that the valves are most efficiently cooled.

Wiring Is Protected

The high-tension wires from the magneto are carefully protected from heated portions of the motor by an insulated metal tube through which they are conducted directly to the spark plugs. Priming cocks are fitted in the cylinder heads to facilitate starting in cold weather, and the whole design is concurrent with the best engineering practice. The lubricating sys-

tem consists of an oil reservoir below the crank pits, from which the oil is sucked by a gear-driven gear pump and delivered through three oil leads to the crankshaft journals. Oil from these returns to supply the crank pits from which splash lubrication is maintained, and then overflows into the oil reservoir below. The crank arms, wrists and rod caps are drilled with 3-16-inch holes and have oil catchers to carry the lubricant from the main journals to the wrist and rod bearings. Means are provided through which the operator may learn at any time the condition of the circulation.

Ignition is optional with the purchaser, either a high-tension magneto or a low-tension magneto and coil for a single jump-spark system being provided. The radiator, which is of the honeycomb type, is supported on two trunnions at the side, and the water circulation is maintained by a centrifugal pump, of such efficiency that no fan is required. The clutch is of the multiple-disk type, and inclosed in an oil-tight chamber, which is bolted on to the flywheel. A universal joint is inserted in the shaft between the clutch and the gearset, and the gearset is of compact design with the main and countershafts in the same horizontal plane and mounted on plain parson's bronze bearings. The gearshift lever quadrant, being in the middle of the car, is bolted directly to the aluminum gearbox, which has a large cap fully exposing the gearbox interior when removed. The rear axle is conventional in design, of heavy construction, equipped with standard ball bearings throughout, and two diagonal strut rods connected in the front to the forward end of the torsion tube are supplied to keep it in alignment. The chassis frame, which is of pressed steel, is raised 5 inches in the rear to give ample spring clearance, and it is narrowed in front to increase the turning radius. The service brake drum is placed on the line shaft just behind the gearbox.

It is a gray iron casting, 10 inches in diameter, with a 3-inch face surrounded by a ring of bronze, which is applied by a rocker carrying spiral cams. The emergency brakes which are operated by a hand lever are of the internal expanding type on the rear drum. Steering gear is of the worm and sector type. The driver's seat may be divided, leaving half the space for luggage, if desired.

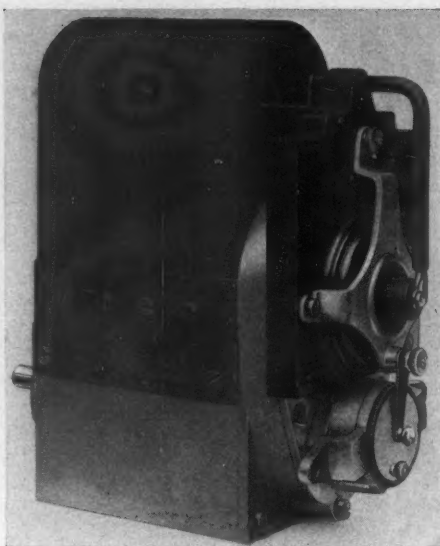
Plymouth Trucks

The Plymouth commercial cars, manufactured by the Plymouth Motor Truck Co., Plymouth, O., are made in six models, with load capacities ranging from 800 to 5,000 pounds, four-cylinder motors ranging from 20 to 50 horsepower and with frame, running gear, wheel, and tire construction in proportion to the service demanded. In addition to the line of trucks, five models of observation cars are made on practically the same chassis used in the truck construction, and having passenger capacities ranging from 9 to 25 persons. All Plymouth products have the same characteristic mechanical features, and a description of the model D-III will give an impression of the design. This model has a load-capacity of 1,500 pounds, a load-platform area of 9 by 4 feet, a 28-horsepower, four-cylinder, four-cycle, water-cooled motor, a double-action friction transmission, side-chain drive and 34-inch wheels equipped with solid tires. The motor has a bore and stroke of 4¼ and 4½ inches, respectively; the cylinders are cast in pairs with integral waterjackets and valve chambers, and valves are all on the same side and mechanically operated from a single camshaft contained within the crankcase of the motor. The crankcase, which is of cast aluminum, is divided horizontally, the upper section forming the base of the motor and supporting the three-bearing crankshaft, and the lower portion, which may be readily removed for the inspection or adjustment of the connecting rods or other crankcase inter-

nals, contains the oil reservoir for the circulating splash lubricating system. The inlet and outlet piping for both the cooling water and gases is most simple and direct in its construction and in the method of its attachment, and all outside fittings are conveniently arranged. A vertical flat tube radiator, a gear-driven centrifugal pump, and a belt-driven fan are features of the cooling system. Ignition is jump spark, with the storage battery and coil as regular equipment, but the motor is designed to receive a magneto, which is fitted at a slight extra cost. Transmission from the motor to the friction transmission is through a shaft with two universal joints, which are provided to permit twisting of the frame when passing over uneven surfaces without doing injury to the machinery. The variable speed transmission consists of two friction disks, 22 inches in diameter, made from a special frictional alloy, which are attached through the universal joints just mentioned to the motor. They are moved forward and back by means of a foot lever operated by the driver. By sliding the friction disks toward the rear, the forward disk is forced into contact with two friction wheels which slide on separate transverse jackshafts, developing what is termed the forward speed. By moving these disks forward, the rear disk is forced in contact with the friction wheels, and the reverse speed obtained. The jackshaft on which the friction wheels are mounted is divided in the center so that each friction wheel is practically mounted on a separate shaft, and differential action thus allowed for. Both the forward and reverse motions of the car are controlled by foot levers and the speed changes and emergency brake are controlled by levers at the side of the driver's seat. External service brakes are fitted and the reverse may be used in case of emergency.

K-W High-Tension Magneto

In connection with its line of spark coils, master vibrator coils, and low-tension



THE K-W HIGH-TENSION MAGNETO

sion magnetos for lighting and sparking purposes, the K-W ignition Co., Cleveland, has brought forth a new high-tension magneto. It might be well at the beginning of this description to explain—for the benefit of those not familiar with the construction of the various types of ignition appliances now in use—the difference between a high-tension and a low-tension magneto. A low-tension magneto acts simply as a source of current and requires in connection with it a circuit-breaking device, a spark coil and a distributor to synchronously produce the high-tension spark necessary in jump-spark ignition. There are two types of low-tension magnetos: One type is merely intended as a powerful and reliable source of current to take the place of batteries and furnish current for either illumination or ignition; and the other is designed for ignition only, and has incorporated in it all the devices required to produce a high-tension current except the induction coil; and when applied to a car the coil is generally placed on the dash or in some less conspicuous place, and requires extra high and low-tension

wiring between the coil and magneto. The high-tension magneto is a complete ignition system in itself, having incorporated in it a low-tension current generator, a circuit-breaking device, a spark coil for inducing the high-tension current, and a distributor through which it may be delivered to the plugs at the proper time.

This is the type of high-tension magneto the K-W company is manufacturing to compete with the foreign products of similar design which have been so successful in the ignition field, and some of the advantages claimed for it are: that, as it generates four waves of current per revolution, and each wave produces a spark, on a four-cylinder motor it would run at crankshaft speed, which is half as fast as most magnetos run; and the wear of its working parts is consequently considerably reduced; this feature is especially advantageous on a two-cycle motor. Owing to the design and the material employed in the magnets, their power and magnetism is permanent and of such efficiency that no batteries are required to start the heaviest motors. Unlike most other types of magnetos, both primary and secondary windings are stationary and located in the center of the magnetic field, and the high-tension current is conducted directly to the distributor without the intervention of a commutator and brushes.

Side Section of Magneto

In Fig. 3, a side section of the K-W high-tension magneto is shown, and its important features are as follows: AS is the rotor-shaft, the only revolving part of the magneto proper. It is supported at either end on annular ball bearings; and rigidly attached to it at angles of 90 degrees to each other there are two rotors, A and B, which are constructed of fine laminae of soft Norway sheet iron. The laminations are riveted together, then accurately bored out to fit the rotor-shaft. The shape of these are best shown in Fig. 4. P is the primary winding, S the secondary, and as both are circular in

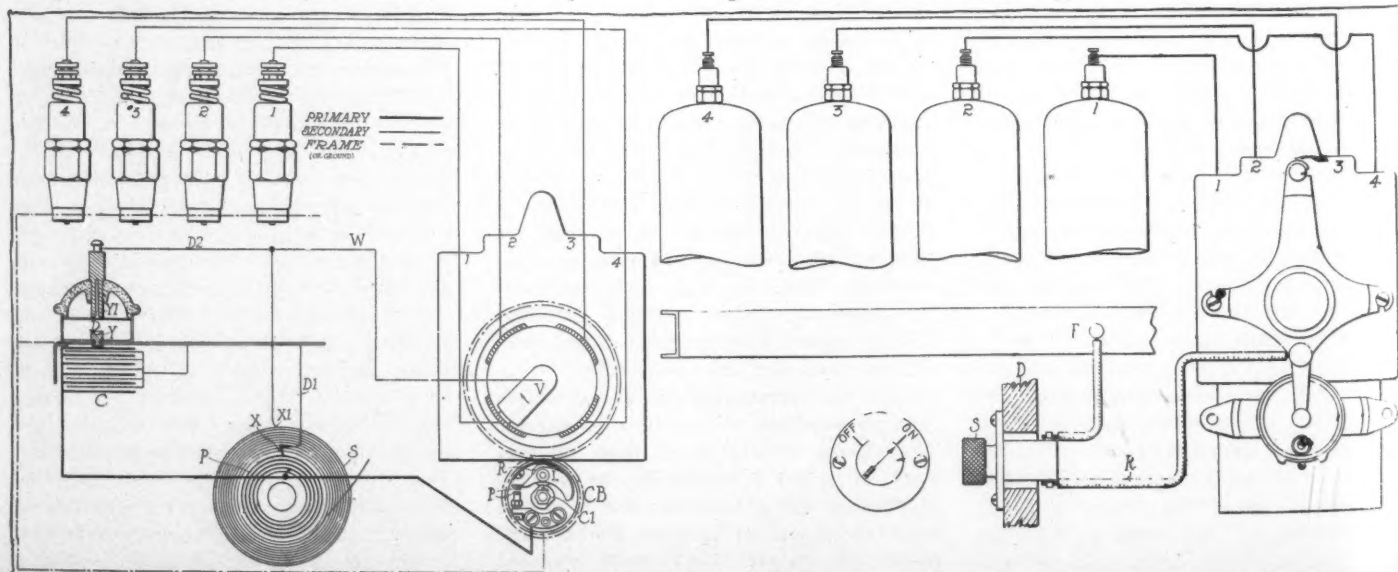


FIG. 1—WIRING DIAGRAM SHOWING INTERESTING FEATURES FIG. 2—GROUND CONNECTIONS AND DIAGRAM FOR MOTOR FIRING 1-3-4-2

shape the largest possible number of turns with the least possible length of wire is obtained. These windings are thoroughly tested before assembled in the magneto and subjected to as great a strain as is possible in use. The condenser C, which is located directly under the safety spark-gap D, is an important feature of this magneto, and consists of many sheets of mica and tin-foil, alternately disposed, and to insure its efficiency each sheet of mica is put to a high-tension spark test before being assembled. The magnets M are of the same type used by the K-W company for the past four years, and are guaranteed never to deteriorate unless battery current is run through them or they are removed from the magneto. The other parts of the drawing, at the right, are the distributor above and the circuit-breaker below.

To describe the operation of the magneto, at each quarter turn of the rotor a wave of current passes through it which charges the primary winding P. This primary winding is connected to the circuit-breaker CB, as shown in the diagram, Fig. 2, and every time the primary circuit is broken by the separation of the contact points P a powerful surge of current is generated in the secondary winding which goes straight up through the terminal T and around in the direction of the arrows to the revolving segment of the distributor, which passes it on to the stationary segments that are connected directly to the spark-plugs by means of the high-tension cables. According to the diagram in Fig. 1, the primary circuit has just been broken by the action of the two-faced cam CI as it raised the lever L through its contact with the roller R, and separated the points P. The secondary which has been induced in the secondary winding S is flowing through the connections as indicated by the arrows, flowing along the wire W, through the distributor and the high-tension cable leading to the plug in No. 1 cylinder. The revolving segment V of the distributor turns in the direction indicated by the arrow upon it and as it comes in contact with the segment to which No. 2 cable is attached, the same process occurs in the primary circuit which induces the high-tension current in the secondary, and the spark occurs in No. 2 cylinder; the next segment that the revolving segment passes is that to which No. 3 cable is attached, and this, it will be seen, passes the current to No. 4 cylinder, indicating that the motor fires 1-2-4-3, for, on tracing the cable No. 4 leading from the last segment touched in the cycle, one will find that it leads to No. 3 cylinder.

Inserting Safety Spark-Gap

The method of inserting the safety spark-gap in the secondary circuit is plainly shown in this diagram. The safety spark-gap is a very necessary part of any high-tension magneto, its object being to

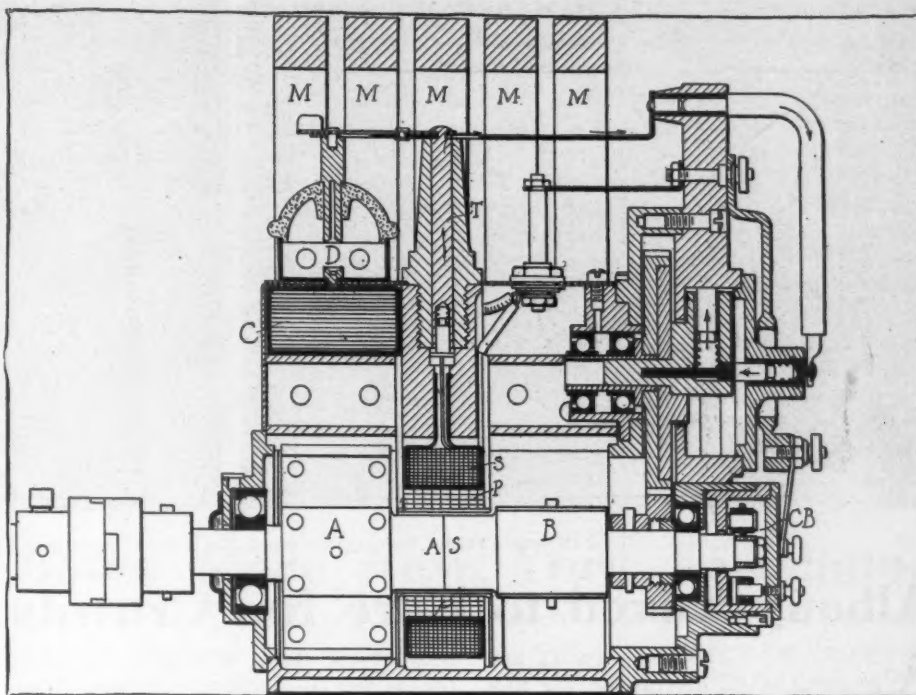


FIG. 3—SIDE VIEW OF K-W MAGNETO IN SECTION SHOWING CONSTRUCTIONAL DETAILS

form a path for the high-tension current in case a secondary cable that leads to the spark plugs should be off when the engine is running. This safety spark-gap, as its name implies, prevents the magneto from burning out, for as long as there is a path for the high-tension current to pass through it will never puncture the insulation of the secondary winding. The wire D1 in the diagram is connected to the end of the secondary winding at the point X, and leads to the point Y of the spark-gap D; the wire D2 is connected to the other end of the secondary winding at the point XI and leads to the terminal YI of the spark-gap; now, then, when a cable is detached and so far removed from the plug or its point of contact at the distributor that the space, and consequently the resistance, is greater than that on the spark-gap, the spark jumps across the gap and the circuit is completed without in-

jury to the coils. In the diagram shown in Fig. 2, the cables are arranged for a motor which fires 1-3-4-2, as may be readily seen by tracing them from the distributor to the plugs; the numbers on the distributor representing the sequence in which the contact is made by the revolving segment, and the numbers at the plugs indicating the cylinders of the motor. The grounding or short-circuiting connections of a high-tension magneto are also shown in this diagram; one wire R leads from the primary connection on the circuit-breaker to one terminal of the switch, which is usually located on the dash D of the car, and the other leads from the other terminal of the switch to the frame of the car as at the point F. When the switch handle or button S is operated and the switch is closed, the primary current of the magneto is not interrupted by the circuit-breaker; it just continues to flow past it, through the switch and frame back to the magneto; consequently no secondary current is induced, there is no spark in the cylinder and the motor stops.

The material employed in the K-W magneto is most adaptable to the uses to which they are put; the castings are of brass and machined with special tools and jigs, so that extreme accuracy may be obtained and all parts interchangeable. All wearing parts are of chrome steel. Circuit-breaker points are very large and made of platino-iridium, an alloy of extreme hardness, so that thousands of miles of use may be had without the necessity of adjustment. The circuit-breaker and distributor plates and mechanisms may be readily removed for inspection or adjustment without the use of tools of any kind, and the whole magneto may be taken

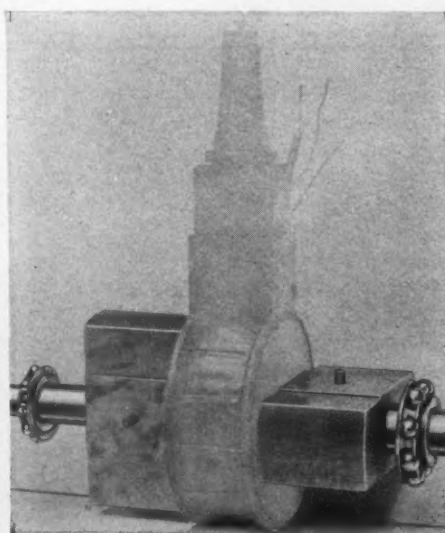
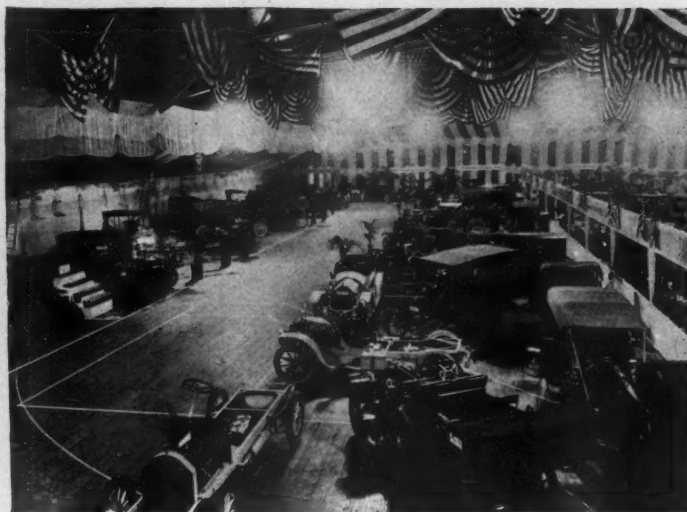


FIG. 4—WINDING OF ROTOR SHAFT

(Continued to page 36.)



TWO GENERAL VIEWS SHOWING INTERIOR OF TENTH REGIMENT ARMORY AT ALBANY

Albany Taxed to Care for Crowds

ALBANY, N. Y., March 7—Daring and gorgeous in its decorations, the first annual show held by the local dealers opened in the Tenth Regiment armory this evening to a crowd that taxed its capacity to the very limit. This building, claimed here to offer the largest main floor space of any public building in the state except Madison Square garden, is particularly adapted to the holding of a gorgeous show and the local people have taken advantage of every opportunity offered.

With the center of the spacious dome heavily draped in flags and national colors the sides and balcony rails are wrapped with a silken cloth of wide white and pink bands made the more effective by occasional groupings of ferns and palms suspended in clusters along the sides. Hanging from the ceiling a short distance from the side walls, forming a regular circle around the building, are clusters of pink roses in huge flower pots, with hidden miniature electric lights to make them stand out the more prominently. Down the center of the spacious floor is a dividing wall draped also in white and pink and carrying upon either side the signs of the exhibitors. This wall is also touched with green plants in addition to shields of national colors bearing the initials of the association.

More than 150 cars are shown by the thirty-odd exhibitors and with the exception of six late comers all are on the main floor. In spite of this large number of cars and accessories there is still ample floor space to accommodate the large crowds with ease. All in all, it is perhaps the most attractive local show the state has held this year, viewed purely from the artistic standpoint and with the comfort of the audience also considered. Certainly none other surpasses it.

One of the most interesting and attractive exhibits is that of the Maxwell-Briscoe-Albany Co., which is showing the largest number of one make of cars of any-

body at the show. Here also are shown for the first time at any of the local shows the new Columbia mark 48 in both touring and roadster models. With the addition of this line to the United States Motors properties there also came a change in the personnel of the local branch. William A. Hamilton, formerly secretary treasurer of the company, has been appointed manager of the Columbia department. Announcement of this change was made at the show.

W. A. Stiert, of the Eureka Motor Car Co., is showing the Cutting car here. This is its first appearance at any of the state local shows. This is a newly organized company here.

William L. Schupp & Co. are showing an Overland with a special body made by themselves which admits of the use of the car either as a pleasure vehicle or as a commercial truck.

There also is an unusual showing of trucks in this show, no fewer than eight being on the floor. It is also interesting to note the entire absence of electric vehicles, the explanation given being that the extreme hilly conditions in this territory rather tend to discourage the sale of electrics.

CINCINNATI CLUB GROWING

Cincinnati, O., March 7—The Automobile Club of Cincinnati closed its most successful year, as well as that of any motor organization in Ohio, by re-electing its present efficient officials tonight, and celebrated the passing of the 700-mark in club membership with an annual meeting marked by an amount of good cheer and a spirit of co-operation seldom witnessed in a like organization. A movement was also inaugurated to the end that a magnificent coliseum be built in Cincinnati, arranged to seat 20,000 persons, and particularly suitable for show purposes, headed by Architect Gustavus Drach, chairman of the executive committee of the club. The club membership has in-

creased in a year from 120 members to 707, and the 1,000-membership mark was set up tonight amid great enthusiasm. The returns from the recent show were brought in and indicated a successful event from every standpoint. The election of officers resulted in the following club members being rechosen to finish the elaborate program in club work now under way: President, Dr. C. L. Bonifield; first vice-president, D. McKim Cooke; second vice-president, G. W. Drach; secretary, Dr. L. S. Colter; treasurer, Louis J. Merkel; consulting engineer, E. J. Carpenter; board of governors, to serve 2 years, Jesse T. Lippincott, A. P. Strietmann, Dr. C. C. Fihe, Chas. F. Ireland and Carl F. Streit.

BIG BANQUET IN CHICAGO

Chicago, March 8—The quarterly meeting of the Chicago Motor Club tonight was followed by a banquet at the Lexington hotel, which brought out the largest motoring multitude ever gathered together in the Windy City, there being 250 members and their friends present to listen to the remarks of able speakers on matters pertinent to the sport and industry. The federal legislation bill was the main theme, and the remarks by James T. Drought, secretary of the Wisconsin State Automobile Association, who was in attendance at the legislative convention at Washington, were followed by a discussion by the members of the club to each write to Congressman James R. Mann of the Second Illinois district, chairman of the committee now discussing the bill, urging that he give his support to the measure. Mann is credited with being opposed to the bill, but it is thought that appeals from the voters in his district may cause him to change his mind.

William Busse, president of the Cook county board of commissioners, was another of the speakers, and his remarks showed that in him motoring has a staunch friend, one who has been building good roads since his boyhood days and who is an ardent believer in the erection



WELL DECORATED HALL IN WHICH RECENT CINCINNATI SHOW WAS HELD

of signboards on county roads. Mr. Busse, who, by the way, is not related to the mayor, favors the employment of prisoners on the roads. It is believed he will be glad to aid motorists as far as lays in his power.

Among the other speakers were Father Dorney, a priest who drives a car and who has earned the sobriquet of the "spot light of humor;" Walter D. Moody, manager of the Chicago Association of Commerce; Dr. R. A. White, former member of the school board, and Charles P. Root, president of the Illinois State Automobile Association.

OLDFIELD-DE PALMA MATCH

New York, March 8—After firing challenges at each other for some time, Barney Oldfield and Ralph de Palma have at last agreed to meet in a match race at Ormond, Fla., Oldfield driving the big Benz, recently imported, and De Palma to handle the Arnold Fiat. The match is set for next Tuesday over the sands at Ormond, the affair to be the best three in five heats.

Some More New York Legislation

ALBANY, N. Y., March 7—Some time this week there will be introduced into the assembly a bill prepared by Assemblyman Callan which is practically the report of the committee on internal affairs and which is regarded by the legislative committee of the New York State Automobile Association as a practical as well as a liberal and comprehensive regulation of motor vehicles with some modifications, although not entirely satisfactory to the state association. The Callan bill, however, is preferred to that introduced last week by Senator Wainwright, which Chairman Quayle claims has not the approval of any club of motorists in the state. The chief objection to the Wainwright bill is a provision requiring the licensing, after examination, of all operators of motor vehicles, which necessarily would include owners. Of interest in the Callan bill is the registration rate, the bill providing for a fee of \$5 for a car of 25 horsepower or less, \$10 for car of from 25 to 35, \$15

from 35 to 45, and \$25 for 45 horsepower or more. This provides for the pleasure-car class, but exceptions are made in favor of electrics and commercial cars which are to be used only in the confines of the city and for which the registration fee will be \$2. Interesting also is the clause whereby it is provided that "registration fees imposed upon motor vehicles other than those of manufacturers and dealers, those used solely for commercial purposes, those propelled by electric battery power, and those to be used solely within the confines of the city, shall be in lieu of all taxes, general or local, to which motor vehicles may be subject." Provision is made by Mr. Callan for the licensing of all chauffeurs employed for hire, who must pass an examination, and whose licenses may be revoked for violations of the act. Severe penalties are imposed for the use of a motor car by an intoxicated person, whether chauffeur or owner, and there also are penalties for those who run away.



PHOTOGRAPH BY GEORGE R. LAWRENCE OF BANQUET OF CHICAGO MOTOR CLUB

Detroit Makers Face a Problem

DETROIT, Mich., March 7—So rapid has been the development of the motor industry in this city, more especially in the past few months, that the problem of housing all the workmen who have come here in response to insistent demands for additional labor is becoming a serious one. Out in the extreme east end of the city, where the Chalmers Motor Co. is located, boarding-houses are scarce, and many newcomers to the works are literally homeless for the time being. For days representatives of the employment department have been scouring the neighborhood within the radius of a mile or so, looking for families that are willing to board from two to six young men each. Others are having their troubles in this regard as well as the Chalmers, so the question is not so much now, "Where will we get the men?" as it is, "What will we do with them after we get them?"

With the opening up of new subdivisions adjacent to projected plants and additions, the opportunity is offered many of the newcomers to build their own homes on the contract plan, and many of them doubtless will avail themselves of the opportunity. Many houses are being built for rent, also, but even so, it is hard to see where all the workmen are going to find accommodations when the big motor car factories like that of the General Motor Co., on which work is expected to start soon, begin active operations. It has been suggested that some of the homeless ones may have to seek refuge across the river, in Windsor and Walkerville, which now seems quite likely.

An announcement of considerable importance to the trade was made last week by the Anderson Forge and Machine Co., now located at the foot of St. Aubin avenue, which makes a specialty of high-grade crankshafts for motor cars. The company has purchased 13 acres of land on Jefferson avenue, diagonally across from the Chalmers factories and immediately west of the acreage recently purchased by the Hudson Motor Car Co., and has given out that it will at once begin the erection of the largest drop-forging plant in the country. This means a total outlay of \$750,000.

"The motor industry has forced a tremendous development of the drop-forging field the last 5 years," said W. R. Anderson, general manager of the company. "We are now using on an average 1,500,000 pounds of steel per month and are employing 175 skilled mechanics. When the new plant is completed we will increase our force to 400, but we will continue our general steam hammer forging department and the finishing of crankshafts at the present plant for an indefinite period."

The Dominion Motors, Ltd., has just closed contracts for the construction of a fireproof factory building, 60 by 300 feet, in Walkerville, Ont., work to begin imme-

diately. The company will manufacture a car known as the Dominion 30, and expects to have it on the market in June. The company is headed by James H. Flynn. It is not a branch of any American concern, but is strictly a Canadian corporation. Those most prominently identified with the management, however, are men who have had wide experience in Detroit factories.

The Metzger Motor Car Co. has been re-incorporated at \$1,000,000, an increase of \$500,000 over the original capitalization, the purpose being to take in the Hewitt Motor Co. of New York. By this deal the Metzger people secure a Selden license and an established motor truck business as well. The plans of the reorganized concern contemplate the erection of a large plant in Detroit for the manufacture of commercial vehicles. The officers are: President, Byron F. Everitt; vice-president, William Kelly; secretary-treasurer, William E. Metzger.

Another new arrival in the motor truck field is the Mt. Clemens Motor Car Mfg. Co., which filed articles a day or so ago, with a capital stock of \$200,000, of which \$75,000 has been paid in. The incorporators are: Robert Klagge, Fred Breitmeyer and Charles Lonsby, all of Mt. Clemens, and H. H. Thorpe, of Detroit. The company has already acquired a 10-acre building site in Mt. Clemens, and work on a factory, 60 by 300 feet, will be started at once. The company will manufacture motor delivery cars exclusively.

The Rapid Motor Vehicle Co., of Pontiac, has purchased 50 feet on Woodward avenue, between Palmer and Antoinette avenues, on which it will erect a garage for the exclusive use of commercial trucks. Ground will be broken in a few days.

The Ford Motor Co. is generally understood to be behind the purchase of a choice piece of Woodward avenue frontage at the corner of the East Grand boulevard. The land was bought by Attorney Anderson, of Anderson & Rackham, but he will turn it over to the Ford in the very near future, it is understood. The company proposes to erect a large sales building on the site, which is an ideal one for such a purpose. The price paid for the land is said to have been upwards of \$15,000.

Honors are coming fast to the Chalmers company. On top of the announcement last week that the Chalmers car had been selected for the pathfinding trip of the Glidden tour this year, the company received word that the national baseball commission had accepted its offer of a Chalmers 30 to the champion batsman of each of the two major leagues the coming season. In his letter of acceptance, August Herrmann, chairman of the national commission, extends sincere thanks and appreciation for the company's offer.

The motor interests of the city are now well represented on the directorate of the Detroit board of commerce. At the election last week, Hugh Chalmers was chosen as one of the seven new directors, and Henry Ford is a hold-over.

The Economy Auto Garage Co., established only about a year ago, already has found it necessary to seek larger quarters, and will move shortly into its own building at 11-17 Selden avenue, where it will have storage room for forty-five cars as well as display space for a full line of Chase motor wagons.

W. C. Orrell, formerly business manager of the local branch of the Buick Motor Co., has been promoted to the position of purchasing agent of the complete Buick accessory department for the United States, with offices and display rooms on the second floor of the Buick building at 127 Woodward avenue. C. C. Starkweather, formerly sales manager, now assumes complete management of all the Buick interests in this district, with headquarters in the same building.

Will B. Wreford, who has been associated with the sporting staff of the Detroit Free Press for the past 5 years, has tendered his resignation to become sales manager of the Michigan selling branch of the Columbia Motor Car Co., handling the gasoline cars made by that concern, with salesrooms at 243-245 Jefferson avenue. The car, which is seen for the first time in Michigan, comes to this agency through the formation of the United States Motor Co.

The Regal Motor Car Co., of Detroit, has begun delivery of its cars from its Canadian factory in Walkerville and exhibited at the Toronto show. The cars are exact duplicates of the models made at the Regal's Detroit factory. The Dominion Motor Co., which also will enter the Canadian manufacturing field very shortly, has received offers of factory sites in both Windsor and Walkerville and lively competition is in progress between the rival Canadian suburbs to secure the plant. The Dominion is the first of the Canadian suburban factories to be financed by Canadian capital. The firm will manufacture the Royal Windsor car, the first model of which has been designed in Detroit and is now in running order. The car is a touring model of five-passenger capacity and will be built in several styles.

GROWTH OF EXPORT TRADE

Washington, D. C., March 6—Coincident with the marked advance in motor car manufacture in this country are the tremendous strides being made in the export trade in cars and parts. The latest compilation of the bureau of statistics, which are for January and the 7 months of the fiscal year ending with that month. The number of cars shipped abroad during January was 492, valued at \$582,255, together with parts valued at \$136,335, mak-

ing a total of \$17,335 for the month. During January a year ago the number of cars exported was 167, valued at \$238,456, with parts valued at \$54,539, or a total of \$292,995. During the 7 months ended January, 1909, the number of cars shipped abroad was 1,041, valued at \$1,950,143, together with parts valued at \$321,406. During the same period of the present fiscal year the number of cars exported had increased to 2,868, and the value to \$3,795,952, while the parts were valued at \$695,609. The combined exports rose in value from \$2,271,549 to \$4,491,561. No other line of industry is making greater headway in foreign fields than the motor car industry.

The shipments of cars and parts during January last were sent to the following countries: United Kingdom, \$176,806; France, \$30,366; Germany, \$6,292; Italy, \$13,970; other European countries, \$18,875; British North America, \$269,111; Mexico, \$47,926; West Indies and Bermuda, \$68,236; South America, \$20,818; British East Indies, \$2,387; British Australasia, \$40,874; other Asia and Oceania, \$15,769; Africa, \$4,915.

Seventy-six cars, valued at \$153,328, and parts valued at \$85,023, were imported into the United States during January, as compared with fifty-five cars, valued at \$112,479, and parts valued at \$61,138, imported in January a year ago. During the 7 months' period the imports of cars increased from 959, valued at \$1,725,252 in 1909, to 1,001 cars, valued at \$1,931,712, in 1910. During these periods the imports of parts increased from \$460,310 to \$575,963. During January cars were imported from the following countries: United Kingdom, 6, valued at \$15,902; France, 49, valued at \$88,817; Germany, 6, valued at \$17,540; Italy, 10, valued at \$19,197.

NEW CLAIM FOR DAMAGES

New Orleans, La., March 5—Claiming \$20,000 damages, not because of injuries received from a motor car, but because she says she was injured in dodging a motor car, Mrs. Lida F. Caston has filed suit against Hart D. Newman, a wealthy owner of New Orleans. Mrs. Caston says she was crossing St. Charles street at Poydras street, when Mr. Newman's car approached. No warning was sounded, she says, and "to save her life, and in the apprehension of bodily injury which would have occurred to her," she jumped, and in so doing, fell and injured herself.

ZEGLEN WILL LICENSE

South Bend, Ind., March 6—At the annual meeting of the stockholders of the Zeglen Bullet Proof Cloth Co., held in South Bend last week, a contract was authorized to sell to other parties the right to manufacture tires with the bullet and puncture-proof cloth on a royalty basis under the Zeglen patents.

Independent Body Reported Forming

CHICAGO, March 7—Is there to be a successor to the American Motor Car Manufacturers Association? That is the question that has become a pertinent one following the meeting in Chicago Saturday of mysterious interests which are said to be working with the idea of promoting an association which will be "an organization for mutual protection against the Association of Licensed Automobile Manufacturers." This association may not be built exactly according to the old A. M. C. M. A. lines, however, but it is said that a serious attempt is being made by unlicensed interests to bring together those manufacturers outside of the Selden bulwarks, and whose most powerful weapon will be a patent which is said to have to do with bevel gear drive such as is utilized by most manufacturers.

It was not until Saturday morning that the secret leaked out. Then it was whispered around that there was to be a meeting held that day at the LaSalle hotel, but no one seemed to know who was to be present or who had called it. A quiet investigation by Motor Age, however, developed that the movement was by no means a new one, it being stated by several who evidently were on the inside to a certain extent that during the last Chicago show they had been approached by one E. R. Russell who claimed to be an engineer and who said he was interested in a tire and axle concern at Connersville, Ind., and also with an electrical construction company in Cleveland. Mr. Russell told several of the unlicensed makers that he and his associates had secured control of valuable patents and that he hoped to bring about an organization of unlicensed makers which could use the patents which he controls as a weapon against the A. L. A. M. He told the makers at the show that he intended holding a meeting later on at which his proposed association would be formed.

This meeting was held Saturday at the LaSalle hotel, but as to its results no one outside of those in Mr. Russell's confidence knows and Mr. Russell himself will not talk for publication, he having informed the newspaper men that it would be another week or 10 days before he would be in a position to say anything. Despite Mr. Russell's secrecy, however, it has been learned that he has made some progress. All those whom he invited to attend Saturday did not go, although several representatives of unlicensed cars paid him a visit more with the idea of learning what he had to offer than to join, it is said.

One of those who paid a visit to Mr. Russell Saturday tells of star chamber proceedings. He found Mr. Russell and a Mr. Moore, a Chicago attorney, located in a suite of rooms on the eleventh floor of the LaSalle hotel and only one applicant

was admitted at a time, coming in one door and exiting from another so that in this manner the proceedings were shrouded with great mystery. When the applicant reached Mr. Russell and his lawyer he was told that the association already had been formed but that it was desired to secure several more manufacturers before announcing the general plans of the association. Mr. Russell would not tell the applicants what concerns were affiliated with him nor would he go into details as to the scope of his patent holdings.

"You put in your application, pay us \$1,000, and we will consider you as a candidate," he is said to have told one of the manufacturers' representatives who called upon him. "When you are admitted you will be told everything."

"But who will pass upon our application?" asked this manufacturers' representative.

"We have a committee composed of one representative from seven manufacturing concerns which passes upon applications," Mr. Russell is said to have replied, but he would not divulge the names of any of them nor could the prospective member gain any further information unless he would put up the \$1,000 asked.

From all it can be learned at the present time, the association is as yet in embryo. It is said that Indiana is the fountain-head of the affair and that several Hoosier manufacturers have been instrumental in starting Mr. Russell along these lines. As to the identity of the Indianians it is hard to conjecture because most of the prominent Hoosier concerns already are members of the A. L. A. M. Also it is declared that neither Henry Ford nor Thomas B. Jeffery are interested in the movement, although it is reported both Mr. Ford and Mr. Couzens had a conference with him 3 months ago.

Following the meeting at the LaSalle Saturday Mr. Russell left Chicago yesterday morning, telling those interested that he could be reached by mail at the Claypool hotel in Indianapolis.

AFTER ALL-INDIANA SHOW

Indianapolis, Ind., March 7—An all-Indiana motor car show is proposed for this city, and probably will be held some time early in September. Carl G. Fisher has the question in hand and, it is expected, will arrange plans for it at once. He proposes to have an outdoor show, open to Indiana manufacturers and Indianapolis dealers. The proposition is meeting with much favor. It is proposed to hold the show at the speedway grounds, northwest of the city. Plans have practically been completed for the annual opening week, which begins March 28. One of the principal features will be a floral parade on Wednesday afternoon, March 30, the prizes to be awarded by women judges.



Foreign Makers Declare

BRUSSELS, Feb. 22—The Circuit des Ardennes, the former great Belgian road race which members of the Royal Automobile Club of Belgium hoped to see revived in connection with this year's Belgian world's fair, will not be promoted. This was settled, probably for all times, according to an official of the club who gave some interesting information to Motor Age's correspondent.

Last year, when the club started to make its plans for the various important events it will promote this year, it decided to ask the makers of Belgian and others countries what kind of a contest they wished promoted, or rather what the bore and stroke limitations should be, what the distance ought to be and if replenishing should be authorized, the club suggesting 3.9 to 4.3 bore and 4.7 to 5.1 stroke and 300 to 500 miles as distance. All the concerns have not yet answered, but from the replies received the sports committee of the Belgian club has come to the conclusion that it would be very difficult to arrive at a set of rules and regulations which would bring about a fair number of starters. The views on the subject of the makers are so varied and quite a large number of important concerns do not want to race that a successful race could not be promoted.

Of six Belgian concerns answering two do not wish to take part in a race. One is in favor of an event run along the lines of the Prince Henry tour, the distance being about 500 miles, replenishing being allowed at the start and at the day's finishing place, the car bodies to be more spacious or larger than the German contest allows, the bore to be 2.95 inches,

FRENCH FLOODS

1 AND 2—OUTSIDE DE DION FACTORY; 3—STOCK ROOM FLOODED; 4—OFFICE FLOODED



Views On Road Racing

3.3 inches, 4 inches or 5 inches, which are commercial or regular stock dimensions, and the weight of the cars to be as in the Prince Henry tour.

One company suggests a bore of 4.1 inches and 5.1 inches for stroke, the weight of the car to be determined and permission for replenishing necessary. Another suggests 4.3 and 5.1 for bore and stroke measurement, the distance for the contest to be about 310 miles.

Of the German concerns six thus far have answered the club's referendum. The Daimler Motoren Gesellschaft suggests a race over a distance of 310 to 500 miles, the bore and stroke to be 3.9 inches and 6.3 inches respectively. The Opel people would like a race of 310 to 375 miles, the bore being from 3.9 to 4.3 inches and the stroke 6.3 inches. The Benz company favors a race of 310 to 500 miles, the chassis to weigh 1,050 kilos, not including anything else but the plain chassis, replenishing to be permitted whenever wanted, but only in front of the grand stand. They want the bore and stroke to be 4.5 inches by 6.9 inches.

Three Italian concerns replied. Isotta-Fraschini wants the distance to be about 375 miles, no limit as to the weight nor as to replenishing, and the bore to be from 3.9 inches to 4.3 inches and the stroke from 4.7 inches to 6.3 inches. The Brixia-Zust wants to see the bore and stroke limited to 3.9 inches and 5.9 inches respectively, the weight not to be over 650 kilos and the distance to be 500 miles. The Diatto wants a contest for light cars or voiturettes with bore and stroke from 2.75 inches to 3.1 inches and 3.9 inches to 4.7 inches respectively, the cars to have



FRENCH FLOODS
5 AND 6—FLOOD AROUND DE DION PLANT; 7—
BETWEEN THE BUILDINGS; 8—A FACTORY STREET

open bodies seating four persons, the distance to be 310 miles and replenishing to be authorized.

Six French houses responded, and of them Clement-Bayard, Brouhot, Rolland-Pilain and Alcyon will not race. The Aries concern wants an endurance or reliability trial, the cars to have a bore of 3.1 inches to 3.5 inches and the weight to be taken into consideration to be only the actual load carried, this load or weight to be 300 kilos for a car with 3.1 inches bore and to be increased in proportion for each additional millimeter of bore. The concern will also take part in an event similar to the Prince Henry tour. The Cottereau would like a contest over a course of 500 miles with no replenishing permission, the bore and stroke to be 4.1 inches by 4.7 inches and the weight to be unlimited. The manufacturers of the Labor cars favor a race over a distance of 310 miles with replenishing allowed, the bore to be limited at 3.9 inches and the car's weight to be as the makers wish.

Even if the Belgian club would have received favorable answers and promoted a race, there is some doubt that it would have been permitted, as quite a strong campaign was being made against the holding of a race by a part of the press. Then there still is that prejudice coming from the farmer and from many townspeople.

"Instead of a race we are planning to arrange a contest similar to the Prince Henry tour in some respects," said a member of the club. "The start and finish will be here in Brussels; it will be a 4 or 5 days' event, the distance to be from 100 to 150 miles daily and to include a turning point each day at an important town. It will be exclusively contested for on Belgian soil, but it will be international or open to all who comply with the regulations. Something will be promoted by the club, as it would be altogether too strange that during a world's fair the leading club of the land could not succeed in promoting a contest of real importance."

IMPROVING OLD ROAD

Philadelphia, Pa., March 6—The most interesting lot of news to Philadelphia motorists lately is the announcement that the Automobile Club of Philadelphia has decided to help along the work of improving the old Haverford-Conestoga road, which parallels the old Lancaster pike. This work, when completed, will save the motorist traveling to or from the city approximately 75 cents for a touring car, and incidentally reduce materially the somewhat plethoric dividends annually declared by the directors of the turnpike company. The club has obligated itself to raise \$2,000 to carry on this work, and has set about gathering it in its usually vigorous way, with prospects of success for the work within the next few weeks.

Rules For German Small-Car Test

BERLIN, Feb. 17—The international reliability trials for small cars, promoted by the Kaiserliche Automobile Club, are scheduled to be held May 1 to 4. Only cars having a rating of not over 6 horsepower are eligible. The starting place will be Berlin, with Luneburg, 17.8 miles, as the stopping place for the first night. The next day the tourists will go to Bielefeld, which is 151.8 miles. On the third day Eisenach is the night stop, 162.4 miles, and the fourth and last day only 134.7 miles will have to be traveled to get to Rothenburg-ob-der-Tauber, the finishing place for the trials. Thus all told the cars will have 619.7 to cover or a daily average of 155 miles.

The rules for the trials are strict and provide that the event is open to manufacturers who must, however, not only enter a minimum of three cars but actually must start three cars or else be considered as non-starters. The cars need not all be of same horsepower or otherwise similar to each other. All, however, must not be over 6 horsepower, the horsepower being calculated according to the formula $HP = 0.3 \cdot i \cdot d^2 \cdot s$, in which i represents the number of cylinders, d the diameter of cylinders in centimeters and s the piston stroke in meters.

The cars must come within the police regulations and be provided with two independent brakes, one to act upon the rear wheels or upon parts which are themselves a part of the rear wheels; an exhaust pot; an exhaust tube which must be located under the car and end at the rear of the vehicle so that the escaping gas in coming out will not produce dust. All cars must be painted and varnished and be provided with four strong mudguards having an average width of 8 inches.

Cars to 3.99 horsepower, inclusive, may have a body seating two or four persons, but cars of greater horsepower must seat four passengers. The body must be of metal or wood. The front seats must be 41 inches wide and the rear seats 43½ inches wide; the front seats must be 29½ inches high and the rear seats 31½ inches high. These dimensions are taken for the width from the elbow supports and for the height from the middle of the motor, that is from the upper part of the back. The lowest place or part of the chassis must be at least 6 inches above the ground.

The total weight of the 6-horsepower car, but without extra tires, inner tubes, duplicate parts, fuel, water, lubricant, without tools but with the tool box, with lubricant in the motor and gear-box, must be at least 750 kilos—1,650 pounds. However, in order to facilitate matters for the contestants, the cars may be brought to the scales with fuel, water and lubricant in their tanks. In this case 40 kilos—88 pounds—will be added to the car's weight. For every fraction of .1 horsepower less than 6 there will be a deduction of 7.5 kilos—16.5 pounds.

The weight of the car's body will be figured as follows: Car up to 2 horsepower, 132 pounds; to 3 horsepower, 154 pounds; to 3.99 horsepower, 165 pounds; to 5 horsepower, 205 pounds, and to 6 horsepower, 220 pounds. The body includes the mud guards, the steps, the empty tool box, the lanterns, the luggage net or box, the horn, the extra tire box, and the attachments used to fasten any of these items to the car. The cars will be occupied only by the driver. In place of the other passengers for which there are seats the car will be given 154 pounds of load in the shape of sacks of sand which will be sealed. During the trials the weight carried may not be lessened. Duplicate parts and extras may be taken along.

The fuel tanks, once filled and closed for the day's trip, may not be refilled that day under penalty of disqualification. Excepting the name and address of the car manufacturer or the car's agent, no other writing or advertising may be on the car.

An average time within which to complete the day's run will be announced and will vary according to the conditions of the roads and the weather. There will be controls along each day's route and the time of the passage of all cars will be taken at these controls. A schedule will be made for the passage time of each car at each control. For every 5 minutes' delay in getting to a control or day finishing place the car will be penalized 1 point. If a car arrives ahead of time it will have to wait until its time has arrived to check in, according to the schedule. The control closes each night 2 hours after the scheduled time for the arrival of each car. Cars arriving after control hour will be considered as out of the running. In the night controls the cars will be parked in a special garage. Nothing may be done to the machines upon their ar-

rival. The next morning each driver will have 45 minutes' time before the starting hour to take care of his car.

Repairs to be made either on the road or at the garage must be made exclusively by the driver and only with the tools and extra parts which he carries with him. Extra tires must be taken on only at controls. Cars arriving late at the starting place will be penalized 1 point for every 5 minutes, and cars which arrive 1 hour late will be disqualified. Every day's start will be given at 6 a. m. On the road the cars may not pass each other when going through towns or villages. Police regulations in the various countries must be strictly adhered to by the contestants.

The prizes will consist in gold and silver medals and diplomas. Any concern whose three cars will have completed the trials without a penalty will receive a gold medal. In case no concern has three cars without penalty, then the three concerns making the best showing will each receive a gold medal. In the awarding of prizes the total performance of the three cars will be taken into consideration. In case a car withdraws its lost points will be credited to the car's manufacturer and besides there will be a penalty of 24 points for the day the car withdrew and every other day it has not started.

BRISCOE U. S. M. C. PRESIDENT

New York, March 5—The first meeting of the new United States Motor Co., the recently organized \$16,000,000 holdings corporation, was held in New York this week and resulted in the election of Benjamin Briscoe as president of the corporation. J. D. Maxwell was chosen first vice-president; H. W. Nuckols, second vice-president; Carl Tucker, treasurer; J. W. Wellington, assistant treasurer; F. D. Dorman, secretary, and W. F. Crosby, assistant secretary. Messrs. Maxwell, Wellington and Dorman occupy the same positions in the new combine as they have had with the Maxwell-Briscoe Motor Co., while Mr. Nuckols is vice-president and general manager of the Columbia Motor Car Co., of Hartford, Conn. Since the meeting it has been announced that Horace de Lisser has been made a vice-president and elected sales manager. Mr. de Lisser resigns as general manager and president of the Ajax-Grieb Rubber Co., to accept, being succeeded by W. G. Grieb. At the present time, the United States Motor Co. has absorbed the plants of the Maxwell at Tarrytown, N. Y.; Newcastle, Ind., and Auburn, R. I., and Columbia at Hartford.

TIRE CONCERN FOR TOLEDO

Toledo, O., March 7—Another large factory is in sight for Toledo, and announcement is made that the company will be incorporated within the next 2 weeks. It will be launched with a capital stock of \$375,000 of which \$200,000 will be paid up, and will be known as the Kelly-Toledo Tire and Rubber Co. Five hundred men will be employed at the plant which will be under the management of Charles F. U. Kelly, for several years prominent in the tire industry. One half of the paid up stock will be taken by local capitalists, the bulk of the sum being already subscribed, while the other \$100,000 will be furnished by outside parties. It is understood that President Willys of the Overland, is encouraging the project and will take a large percentage of the output of the new concern.

Reeve Answer in the Knight Case

BOSTON, Mass.—Editor Motor Age—There appeared in the columns of Motor Age recently a letter on behalf of the manufacturers of the Knight slide-valve motor which indicates the existence of a controversy over the claims of the Reeve re-issue patent No. 12,991. The Packard Motor Car Co. has license from us under this patent for certain construction, but, as owners of the legal title and of full rights for all other uses, we feel impelled to correct what may become a wrong impression on the part of those not fully informed of the facts as to the validity of the patent.

We obtained this re-issue through our regular attorney, and applied for it promptly on discovering the grounds for re-issuing the original, just as the law requires. We are further able to state that the re-issue was not granted until after a thorough and conscientious examination on the part of the patent office officials, which failed to reveal any participation or other reason for denying the claims.

In the published communication from Mr. Knight's representative certain acts were alleged and certain opinions of counsel quoted to give the impression that a hold-up was being attempted on the basis of an improper assertion of claims dominating the use of a pair of slide-valves coaxial with the motor piston.

We have no knowledge of our responsibility for the policy which may have been adopted by our licensees, but we desire to point out what anyone may ascertain who is sufficiently interested to investigate, namely, that Professor Reeve filed his claims in 1901 for the combination, in a motor, compressor or pump, of two co-operating cylindrical or piston slide-valves, in one of which the working piston is mounted to reciprocate, and his patent as originally issued claimed substantially that subject matter. An alleged grievance in any quarter is no warrant for an infringement. Although we respect the opinion of so eminent an English authority as Dugald Clerk, he is in error as to our patent,—probably because he is misinformed. So far as we are informed by the communication mentioned above, or otherwise, no patent or publication prior to 1901 anticipates the combination of working piston and concentric sliding valves as claimed by Reeve.

It is true that the patent shows several different arrangements of valves for compressors, motors, etc., including steam engines, and it has been hastily alleged by its detractors that the expedients illustrated could not be applied to an explosion motor. That, however, is an error, for it manifestly is entirely practicable to embody the essential elements of the valve structure shown and claimed by the patent in a gas motor.

It detracts nothing from an inventor's rights that he has not at once started to manufacture under his patent. Such delay usually happens when one is ahead of the art and, for this reason, many of the most valuable patents have not gone into extended use until nearly the time of their expiration. It not infrequently happens in such cases that later inventors suppose, erroneously, that they are entitled to the broad idea.

We take the liberty of asking Motor Age to publish this statement for the purpose of correcting any impression that may have been created to the effect that the Reeve re-issue patent is not entitled to respect as constituting a valid monopoly for what it purports to claim.—C. P. Power Co.

FAVORS PATENT APPEALS

Washington, D. C., March 5—The senate committee on patents has made a favorable report on the bill to create a court of patent appeals, to sit in this city. Regarding the need for such a court the report says:

"The necessity for a single court of appeals for patent cases becomes apparent to the student of conditions relating to patent law and its administration by existing courts. The judiciary act of 1793, when adopted, provided for a single court of appeals in all cases. The supreme court of the United States was the single and only court of last resort known to the judiciary act of 1793. The act remained in that respect unamended until 1891. In this form it was entirely satisfactory to litigants, lawyers and the public, so long as the supreme court was able to take care of the business brought to its docket. No class of litigation suffered, and every case was satisfactorily considered.

"If the business of the supreme court would permit a return to the law prior to the amendment of 1891, it would be most desirable. However, it is conceded that on account of the great and growing volume of business in the supreme court such a return is entirely inexpedient and inconsistent with the needs of the public. The amendment of 1891 creating the circuit court of appeals was enacted as a relief measure. It is impossible for the judges of the supreme court to consider adequately and satisfactorily either to themselves or to the public the increasing number of cases brought to it on appeal.

"It was to relieve this condition of business in that court that the circuit courts of appeal were created by the 1891 amendment. The result of the creation of the circuit courts of appeal has been satisfactory in all cases except patent cases. In patent cases it has resulted most unsatisfactorily and has left the rights of the public and of patentees in great confusion and uncertainty. The nine circuit courts of appeal have exer-

cised their jurisdiction as courts of last resort in litigation over general matters without such confusion and uncertainty. This has been true because, as a general proposition, a decision in litigation of this sort has been final and binding with respect to the parties to the suit and to the subject matter involved. In patent cases the reverse has been true, because a patent right is coextensive with the United States, and yet it is the subject of determination of nine different courts of last resort, no one of which is bound by the other.

"The reports of the circuit courts of appeal abound with cases conclusive of the confusion and uncertainty in respect to patent titles. Under the present system, a patent may be decreed to be valid by the circuit courts of appeal in eight circuits. If, in the ninth circuit, the court decrees the patent to be invalid, the patentee has lost all of the benefits of the decisions in the other eight circuits because in the ninth circuit anybody may manufacture the article and sell it in any part of the United States. Such a condition is, of course, destructive of the rights of the patentee and is also an injury to the public. The public is entitled to know whether it has a right to make, use or trade in any article of commerce at the end of a decision of one court of last resort and ought not to be compelled to wait on the harmonious judgment of nine courts of last resort."

LOUISVILLE SHOW PROSPECTS

Louisville, Ky., March 6—That the coming show, which will be held in the Armory March 17-19, given by the Louisville Automobile Dealers' Association, will be one of Louisville's grandest affairs for 1910, is indicated by the fact that the Central Passenger Association has already notified those in charge of the show that all railroads entering Louisville will grant reduced rates from all points within a radius of 100 miles during the week of the exhibition. Every inch of space on the main floor of the armory, where the show will be held, has been sold, and but very little space remains in the balcony. It is confidently expected that this will also be taken up several days before the opening. As there are 54,000 square feet of floor space on the main floor, and an additional 18,000 square feet in the balcony, the mammoth proportions of the show can easily be imagined. The show will open daily at 1 p. m. and continue until 10:30 p. m. A band of music, consisting of thirty pieces, will furnish selections afternoon and evening. The official opening will be attended by Mayor Head and the board of public safety, and the former will deliver an address. A dinner, in honor of the directors, will be given at the Seelbach hotel, prior to the official opening of the show. The mayor and his official family will also attend.



MEMBERS OF THE QUAKER CITY MOTOR CLUB'S VOLUNTEER CORPS AT WORK

Motor Corps Big Factor in Strike

PHILADELPHIA, Pa., March 7—When the present trouble with the trolley strikers and their sympathizers in the various trades unions of this city is finally settled, no single agency will have done more to quell the riotous outbreaks so general throughout Philadelphia during the past fortnight than the motor car, and no association of public-spirited and law-abiding citizens will have worked more faithfully and disinterestedly to bring about a cessation of hostilities than the Quaker City Motor Club's First Volunteer Motor Corps. For over 2 weeks these men have neglected their various businesses to assist the authorities in maintaining order. Nearly a score of the volunteers, with twenty-two cars of their own and a dozen hired vehicles, under the direction of Commander Charles J. Swain, a former president of the Quakers, has been whipped into a most wonderful weapon of municipal defense. Night and day, 24 hours a day, they have been on duty, with short intervals for necessary rest, for 15 days, with prospects of possibly as great a length of service ahead of them. There are millionaires among them, professional men and men of business, but they are uncomplainingly doing their trick each day, driving in person frequently, and providing a substitute when compelled to rest.

The First Volunteer Motor Corps was organized about 2 years ago, and when it offered its services in turn to the city, state and nation, Mayor Reyburn, Governor Stuart and President Roosevelt each hastened to accept them. When the trolley men's strike suddenly was called, Saturday, February 19, like a flash of lightning from a clear sky, the local police authorities were caught unprepared and riots were in progress in a dozen different sections of the city at one time, the police having very inadequate means of carrying men to the various danger points. At 3 o'clock on Saturday afternoon, seven or eight of the volunteers gathered hastily

at the Q. C. M. C. quarters in the Hotel Walton, in response to a hurry call over the 'phone from Commander Swain, with the result that at 3:15 a tender of assistance was 'phoned to the city hall.

Mayor Reyburn did not stop to consult his assistants, but accepted the tender then and there. Twenty minutes later eight big cars, most of them capable of carrying a dozen or more men in a pinch, were at the city hall and were immediately pressed into service. Before night more than a dozen additional volunteers had reported, some of them with two cars. The authorities hired about a dozen others. Owners and drivers alike were sworn in, provided with badges and revolvers, and put to work at once. Riot calls from turbulent Kensington, 5 miles away, were responded to in 10 minutes—sometimes less. Millionaire J. Fred Betz 3d, one of the hardest working of the volunteers, who is devoting his time and his car—the big yellow Simplex 60 he drove in the Fairmount park race—to the cause of law and order, when given permission to "get there as quick as you can," carried a captain and a bunch of bluecoats to a West Philadelphia riot in 6 minutes. It was only 5 miles, but the coppers were scared stiff by the rate at which they traveled. They thawed out in short order, however, when they began to mix into the hot scrap in progress. The rioters had been in full possession, and were working their will upon a bunch of blockaded cars and their crews. Ten minutes after the riot call reached the city hall two-score of bluecoats were on the ground and the mob was flying in all directions.

That is a fair sample of the work the volunteers have been doing for a fortnight. They are still on the job. They sleep and eat at the city hall—when they get a chance—and draw \$2.50 a day. This self-sacrificing work in the interest of law and order and for the preservation of the good name of the city whose name they bear is costing these gentlemen money.

It is saving the city thousands of dollars in riot damage claims, as one of the city officials admitted, and has provided the department of public safety with a defensive weapon without which it would have been helpless.

Besides Charles Swain and his two Wintons, and Fred Betz, 3d, and his Simplex, Dick Sellers, the club's technical man, has his two Pennsylvania cars at work; Lou Vogel, a pair of Americans, one of them, driven by the veteran Harry Willis, being Superintendent Taylor's official car; E. H. Lewis, a Buick; C. Edgar Shreve, a Packard; Dr. Overpeck, the club scout, a Mitchell; J. F. Morgan, a Chalmers; Evans Church and Archie James, each a big White, capable of carrying a company, on a pinch; ex-President P. D. Folwell, a Packard; J. Douglass Bartlett, W. C. Jackson, Archie Hughes, W. J. Foss, A. E. Maltby and a dozen others, with four Autocars, three Knoxes, a pair of Pirece-Arrows, a Winton, etc.

Mayor Reyburn, Director Clay, Superintendent Taylor, Chief Tim O'Leary and all the other high lights in the department are enthusiastic over the work of the volunteers. Certainly without them the police would be in a plight. It is a demonstration of the effectiveness of the motor car as an adjunct of the policing of a great city which will doubtless attract the attention of the entire world.

The sympathetic strike which the allied local unions have entered into to assist the striking trolley men has practically driven the taxicab from the streets of Philadelphia. Not more than a dozen of the 250 of those vehicles operated in this city are running. The companies are losing \$10,000 a day. The men stopped work at midnight on Friday night, and hotel and railroad cab service was given a severe jolt. Old horse-drawn cabs have been hurriedly resurrected, but the inadequacy of the old service is pitiful to behold. With spasmodic trolley service, and with the taxicabs idle, the stranger in Philadelphia is having his own troubles, for, to add to his dilemma, the Livery Drivers' and the Hackmen's Unions are both out. It is a case of walk or a 10-cent ride on one of the tumble-down wagons which itinerant vendors and hucksters have temporarily, with the aid of a bench or two, or perhaps a few boxes, transformed into passenger conveyances.

BALTIMORE DEALERS DISGRUNTLED

Baltimore, Md., March 5—If the statements made by dealers of this city and members of the Automobile Club of Maryland actually represent the feeling that prevails here, Baltimore will be the scene of rival shows next year. A strong movement is now under way for the organization of a dealers' league, the object of which will be to promote motor car shows here in the future. The dealers express themselves strongly on the matter and it

would seem that they were not entirely satisfied with the arrangements of the recent show, although that exhibition was voted a decided success. Two things that have raised the ire of the dealers are what they say were a lack of proper decorations and signs at the various booths. The sentiment of a majority of those who handle cars here is better expressed by the following statement of a dealer who is in a position to know the ins and outs of the matter:

"The dealers were treated like a lot of toys. It was just the same as if we were given a line on which to stay and we simply could not go over it. We could not decorate the booths; we had to abide by what the committee said and, as a result, there were no decorations that would attract any favorable comment among those who visited the show. We even had no privileges on the signs. We had to pay dearly for a sign of a certain size and we could not go over that limit. The only decorations at the show were a few that were left over from the poultry show."

On the other hand, the club, through Assistant Secretary Hutchison, comes back with the declaration that "the club will not only hold the show next year, but will make it even a bigger success than this year. Any opposition of the club's management of the show was put up by men who, for reasons of revenge only, were responsible for the story." President C. Howard Millikin, of the club, who also was chairman of the show committee, said that the only opposition to the show management was by men with petty kicks who thought they were badly treated because they could not get all they wanted for nothing. It has been intimated that the club holds as one of its strong points the fact that it, alone, would be in a position to get the Fifth Regiment armory for show purposes. The dealers, however, declare that even if they were unable to get this building when they hold the show there are several other buildings in the city that would be suitable for such an exhibition which they could obtain without any trouble.

SHOW RIGHT SPIRIT

Boulder, Colo., March 5—The county commissioners of Boulder have inaugurated a good roads campaign, and will build more miles of good roads this year than during any year previous. The work during the last 3 years has demonstrated that the county has at its disposal practically unlimited quantities of first-class road material, and the commissioners are planning in a systematic way to expend the road fund so as to secure the best results. Boulder county spends annually on its roads about \$50,000, and it is the purpose of the commissioners this year to devote a larger part of this fund to permanent road-building than ever before.



WHITE STEAMER ON DUTY DURING PHILADELPHIA'S BIG STRIKE

Chicago Will Have 2-Week Show

NEW YORK, March 4—The show situation has been cleared up by the action of the board of directors of the National Association of Automobile Manufacturers which was held in this city Wednesday and which decided to follow New York's lead in a matter of a 2-week show as regards Chicago, and which also put Atlanta out of the running as a national show circuit candidate. A resolution was passed by which the N. A. A. M. declared that it would sanction no shows other than the annual national shows at New York and Chicago, which resolution most effectually sidetracks the Georgia metropolis.

Taking up the matter of Chicago for 1911, the N. A. A. M. decided that the western national show will extend over a period of 13 days exclusive of Sundays instead of 7 days, as heretofore. This action was made necessary because of the fact that while Chicago has more floor space at its command than any other show in the country, still it is not large enough, as was proven by the fact that applications for space from more than forty makers of cars and 200 manufacturers of accessories had to be refused for 1910, while the commercial vehicle makers were not even considered.

Under this new arrangement, however, it is calculated that every one desiring to shows cars or accessories can be accommodated. While it has not been settled definitely, it is probable that during the first week of the Chicago show, only those makers affiliated with the N. A. A. M. will divide the space. This will be the week of January 28 to February 4, inclusive, while the second week will be from February 6 to 11. Just how this second week will be used is not known as yet. It may be that pleasure cars and commercial machines will be given the space, but this is largely dependent on the amount of interest taken in the show by the commercial vehicle makers. Another reason for lengthening of the Chi-

cago show time is that the manufacturers of motor cycles are demanding more room. In the last show they had twenty-five spaces, but now the Motor Cycle Manufacturers' Association declares that it must have four times the space it has had in the past.

Confirming the report in Motor Age the week following the Chicago show, Manager Miles told the executive committee that there were 1,548 dealers in attendance at Chicago, while the total attendance, including the public, dealers, exhibitors and their attendants, exceeded 200,000 and probably reached nearer 220,000. Following the discussing of the show came the appointment of the following standing committees for 1910:

Membership—S. T. Davis, Jr., J. W. Gilson, C. C. Hildebrand.
Legislative—W. R. Innis, Benjamin Briscoe, C. G. Stoddard.
Good Roads—R. D. Chapin, S. D. Waldon, L. H. Kittredge.
Show—W. E. Metzger, A. L. Pope, Thomas Henderson.
Contest—H. O. Smith, W. T. White, W. E. Metzger.
Auditing—Benjamin Briscoe, S. T. Davis, Jr., Charles Clifton.
Traffic—A. L. Pope, W. R. Innis, C. C. Hildebrand.

CAPTAIN LEWIS' PLATFORM

Racine, Wis., March 7—Captain William Mitchell Lewis, president and general manager of the Mitchell-Lewis Motor Co., of Racine, Wis., has created a mild sensation since announcing the platform upon which he will seek the nomination for governor of Wisconsin on the Republican ticket in the fall of 1910. In brief, Captain Lewis declared himself in favor of: County option; for a workingman's compensation law; for good roads; for industrial education; for conservation of water powers; for payment by water-power operators to the state for their use; for reforestation; for lessening the use of money in campaigns; for state appropriation to reclaim swamp lands; for second choice amendment to primary election law. Wisconsin motorists, in many instances regardless of political color, are



The Readers' Clearing House



WANTS COST OF OPERATION

WASHINGTON, D. C.—Editor Motor Age—Through the Readers' Clearing House will Motor Age give me some information on the cost of upkeep of a motor car, including storage, repairs, supplies, etc., for the period of 1 year, this information to be on a car that is new when purchased, also when it has been used for some time. I should like this information to include the different kinds of gasoline, oil and electric vehicles.—E. R. Haas.

It is impossible to answer your question because of not knowing the type of car or size you intend to operate and whether you are located in a large city or in a small town. If you will give something more definite relative to these conditions Motor Age will attempt to give you more accurate information, which information at best is based upon particular cars and cannot be taken as general. Motor Age readers who have kept accurate cost of fuels, repairs, garaging, tires and maintenance are invited to send in such information.

INCREASING CAR SPEED

Staunton, Va.—Editor Motor Age—Would Motor Age have any objection to naming the motor of the racing car to which it refers in the Readers' Clearing House columns of December 16, as having an altered cam which gives 5 miles per hour greater speed, with some general idea of its design, and dimensions of the valves? And what are, in a general way, the parts of especial importance in designing a motor car for speed regardless of all else?—M. A.

As there were no rules discriminating against the use of altered cams, Motor Age is hardly justified in mentioning the name of the motors using them. This, however, is but one of the little tricks of the racing game employed to increase the speed of the cars. The change in the design of the cam consists in merely making it longer, so that the opening of the valve is greater, or shaping it so that the valve opens earlier and closes later, and the inlet and exit of gases facilitated. The valves, themselves, are also often enlarged for the same purpose. Boring out of cylinders, and the fitting of tighter pistons are common practice, it being claimed that cylinders which ordinarily have a bore of say 3 1/32 inches are catalogued at 4 inches, and for racing purposes another 1/32 inch is added to the diameter of the cylinders which, in itself, apparently is such a small item as to be often ignored by the examining member of a technical committee. To increase the compression a crankshaft may be substituted with slightly longer throws, which

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

also increases the length of the stroke, or longer connecting-rods may be fitted. Another common practice is that of doping the gasoline with ether, which it is claimed greatly increases its efficiency. The changes made in tuning a car up for a race are on the whole very slight, but add greatly to its efficiency in a speed test; and although some of these changes increase the strains and diminish the strength of the various parts, an effort is made to overcome this by employing the best materials obtainable subjected to most careful and expert workmanship.

SHOCK-ABSORBER ACTION

Cincinnati, O.—Editor Motor Age—Through the Readers' Clearing House will Motor Age answer the following questions:

- 1—What effect has a shock absorber on a spring?
- 2—When is a shock absorber most efficient—at the time the shock is encountered, or at the rebound?
- 3—Is a shock absorber to absorb the shock which is caused by the encountering of the obstacle or to prevent the rebounding of the spring?—L. V. W.

The answer to all these questions depends upon the design of the shock absorber. Most shock absorbers are designed to act in both directions, that is, against the compression and against the rebound. Some shock absorbers are not brought into effective action until the compression or rebound of a spring approaches the abnormal, and their efficiency in reducing the shock increases with the extent of the compression or rebound. The object of almost all shock absorbers is to gently but firmly check the force of compression or rebound of a spring, to prevent the disagreeable vibration of the vehicle body and to protect the springs.

ASKS MANY QUESTIONS

Jordan, Minn.—Editor Motor Age—I submit herewith a few questions for the Readers' Clearing House: 1—Is a carbureter having a waterjacket or one with a hot air connection preferred, and why? Would there be any difference in the power?

2—My car has a four-cylinder engine with Remy magneto. While testing for fouled plugs, I removed a spark plug lead



and dropped it. Was there any danger of rupturing the coil?

3—Can small blowouts of casings be vulcanized with small vulcanizers, having a 3 by 6 inch surface shaped to the shape of the tire? My vulcanizer has a curved surface 3 by 6 to fit casing and uses 60 pounds of steam as a source of heat. Is this surface enough to vulcanize new fabric and rubber in case of blowout?

4—Would it be advisable to make a jacket around the part of inlet manifold next to carbureter with a connection from it to exhaust pipe and provided with outlet, so as to allow hot exhaust gases to heat the manifold? It seems to me this would be better than a waterjacket.

5—When fitting new rings into an old cylinder, is it advisable to grind in the new rings by using the finest powdered emery and oil by working the piston back and forth in the cylinder, and also turning it around gradually at the same time? Is there any danger of grinding the piston too much if the rings are ground to suit all around?

6—Please give a drawing to show the interior of the G. L. Economizer, with an explanation. This is made by the G. L. Economizer Co. at New York, and is a carbureter attachment.

7—How are inner tubes vulcanized with the portable vulcanizers.—Howard Habbegger.

1—Heating the carbureter with warm water from the cooling system gives good results, but the starting of the motor is more difficult, especially in winter. Heating the carbureter by taking the air admitted to it from the surface of the exhaust pipe or some other warm portion of the motor has also been preferred by a number of manufacturers. The water-jacketed carbureter, however, is perhaps the most popular.

2—No. There was no danger of injuring the coil by simply having the lead disconnected for a few seconds, but with some types of transformer coils a prolonged disconnection of this sort is injurious. It is for this reason that some types of magnetos are equipped with spark-gaps.

3—A 3 by 6-inch vulcanizer would hardly be practicable for repairing blowouts, for the reason that to successfully repair a blowout, the rubber tread and the first three or four layers of fabric must be removed from the casing for several inches on either side of the injury and replaced with layers of new fabric and raw rubber; and a repair of an area of only 3 by 6 inches would not be very substantial, unless the blowout hole were unusually small.

4—When a carbureter is rather small, for the engine which it has to supply, it becomes very cold while in operation, as the amount of heat necessary to effect the evaporation of the gasoline is more than is available from the entering air or than could be secured through the metal of the carbureter by conduction. The temperature of the metal becomes so low that water condenses on it, and, in extreme cases, is deposited in the form of frost. This indicates a temperature within the carbureter too low for the successful use of inferior fuel, and so low as to possibly affect the intimacy of the resulting mixture, even if high-test gasoline be used. Moreover, if any water be present in the float chamber, it will be likely to freeze and disturb the flow of the gasoline. These several undesirable results are produced by the use of a carbureter too small for the engine; and to meet these conditions some makers provide means for heating the air supply. These, however, are not the only reasons that heating devices are applied to carbureters. It appears, from results of experiments that the fuel consumption decreases with an increase of jacket temperature for a given output, but only up to a certain point. The most effective temperature seems to be about 110 degrees Fahrenheit; and, furthermore, it has been found that a motor whose inlet gas is more properly vaporized in this way, runs more regularly on small throttle opening and light load. From this it will be seen that too much heat is not beneficial; and heating carbureters by exhaust gases is open to some objection, as oil and carbon soot are deposited in the heating jacket.

5—To use emery and oil, in the way mentioned, to grind in piston rings, would be as serious to the life of the engine as feeding ground glass to a human being. The emery would accumulate in the pores of the cast-iron of pistons and cylinders. Even an unusually thorough cleaning of them afterwards would not remove these particles; and they would be loosened up and continue to grind with disastrous results, after the motor is assembled and in operation.

6—The G. C. economizer is not illustrated herewith. An explanation of it will be given later.

7—By simply applying a little French chalk to the inner portion of the tube through and around the hole, then placing a semi-vulcanized patch on the inside, so the inner surfaces will not stick together, then arrange the vulcanizing cement and rubber in the usual manner, clamping the section to be vulcanized between the molds of the vulcanizer, and vulcanizing in the regular way.

IMMUNE FROM TIRE TROUBLE

New Haven, Conn.—Editor Motor Age—I note with some pleasure the article in the Readers' Clearing House columns of February 10, headed Carthage, S. D.,

and signed by Charles E. Barkl, criticizing tire mileages. Answering him, I would state that I have a 30-horsepower Pullman touring car, which I bought July 1, 1909. Since buying the car I have run it in Pennsylvania, New Jersey, New York, Long Island and all over Connecticut in all kinds of weather and on all kinds of roads. On January 30, 1910, I had my first puncture, having covered 4,937 miles without any tire trouble of any kind—not a blowout and not a puncture. I would also state that a friend of mine had one tire give him 9,600 miles without a puncture or blowout. However, I would like it understood that I believe the driver of a car can make his tires wear out quickly by poor judgment in using his brakes, and not having the proper amount of air in them. My tire mileage is not guesswork, for my Stewart speedometer is my indicator.—Floyde W. Andrews.

COMPARISON OF MOTORS

Sioux City, Ia.—Editor Motor Age—Please advise me through the Readers' Clearing House columns the difference, if any, in power between a valve-in-the-head motor with 5-inch bore and 4¾-inch stroke with a piston displacement of 373 cubic inches, and a T-head motor with 5-inch bore and 6-inch stroke with a piston displacement of 471.2 cubic inches, both with the same compression, timing, valve-lift, oiling, etc., at same number of revolutions per minute, taking into consideration the loss of heat units in the T-head type, and the inertia of dead gas present in this type of engine, and the accelerated cooling of gas as the piston approaches the end of the explosion stroke.—Inquirer.

Motor Age cannot give from actual tests which it has observed the difference in power between two motors of the types you speak of. Manufacturers, however, who have manufactured these types and have attempted to arrive at some just comparison between the two make public a statement that they have obtained a 15 percent greater efficiency with the valve-in-the-head than in the T-head design.

LONG STROKE PREDOMINATES

Milford, Tex.—Editor Motor Age—Will Motor Age answer the following questions through the Readers' Clearing House? What percent of pleasure cars have a longer stroke than bore? Of the three types—longer stroke, longer bore and square cylinder—which seems to be gaining? Which is the best hill-climber? What was the size of the cylinders on the Pierce-Arrow that won the Glidden trophy in 1905? Has there been any change since then? When a motor equipped with a single-system high-tension magneto becomes hard to start, what is the proper thing to do? What percent of the cars use a single high-tension magneto system?



Is it gaining or losing in comparison with the dual system?—Fox.

It is safe to say that 95 percent of the cars have longer stroke than bore. The square cylinder has not so great a following as it had a year ago. A careful analysis of the sizes of the different motors, as shown on pages 2 and 3, Motor Age, March 3, will show accurately where this situation stands. The long-stroke motor is generally considered the better hill-climber, particularly where the hills exceed a certain grade. The cylinder sizes of the Pierce-Arrow which won the 1905 Glidden tour were 4¾ by 4½. The Pierce-Arrow motors for the present year are as follows: Six-36, 4 by 4¾; Six-48, 4½ by 4¾; Six-66, 5¼ by 5½. There is no reason why a motor equipped with a single high-tension ignition should become more difficult to start except due to cold weather and faulty carburation. Motor Age has not the information at hand to state what percentage of cars employ the single high-tension magneto system, although tables showing the number of users of each were printed in the different show issues of Motor Age this year. In these the dual and double systems are in the lead of the single high-tension system.

ANENT WILD-CATting

Atchison, Kan.—Editor Motor Age—I note with much satisfaction the interest being manifested by dealers in the wild-cat or "curbstone" competition with which they have to contend, but I never have seen a suggested remedy, except complaint against the manufacturer making such contracts. I believe, if the dealers in different states were to organize, their influence could be used with the manufacturer to stop such practice. No manufacturer would care to antagonize his entire force of agents in a state simply to place a few cars. Steps have been taken toward the organization of a dealers' association in this state, to work against such practices, and I would ask any legitimate dealer in Kansas who reads this letter, and who does not receive a direct communication from me, to write me, expressing his willingness to join such an association, and I will forward my ideas as to the plan of organization. Suggestions as to the manner of handling such an organization will be thankfully received.—W. J. Caughey.

EXPLAIN NON-DIFFERENTIAL

Detroit, Mich.—Editor Motor Age—In Motor Age, issue January 15, was my query regarding non-differential cars. In the January 20 issue Mr. Wright of Bloomfield, Ind., states a case that I question its non-differential working. I would like to have Mr. Wright explain "if there is no ratchet or differential in the chain sprockets, how is the same managed where one of the traction wheels goes faster as is the case when rounding corners?" Also, how is the car reversed?—Karl A. Kendrick.

Features of New Cars Seen at Cleveland Show

Continued From Page 23.

apart and assembled with a screwdriver—a combination of simplicity and accessibility of great advantage.

The Jewel motor cars, manufactured by the Jewel Motor Car Co., Massillon, O., made their first appearance this year at the Cleveland show. The Jewel cars are made in three models, including a run-about, a stanhope, and what is known as a model D special, equipped with a piano-box body. From all outward appearances the Jewel cars naturally prompt a comparison between them and electric cars; for they have all the outward marks of an electric vehicle. The motor, which is of a one-cylinder two-cycle internal-combustion type, is located under the driver's seat in the same position generally occupied by the motors of electric cars. The radiator of the cooling system is located under the front end of the car; side-chain drive is employed from the jackshaft to the rear wheels, and were it not for the fact that there is a side lever for operating the planetary transmission and engine control levers under the steering wheel there would be nothing to suggest that it was a gasoline car.

The Jewel Motor

The Jewel motor is of the valveless type with the cylinder, crankcase and water-jackets cast integral, and has a cylinder bore of $4\frac{1}{2}$ inches, a 4-inch stroke, and is rated at 10 horsepower. The motor is suspended from cross members of the frame, which is of angle steel, and so arranged with the cylinder head at the rear and a little to the left, so that it is quite accessible, and the weight of the flywheel and planetary transmission well distributed.

All internal parts are ground, and large phosphor bronze and babbitt bearings are employed for the crankshaft. The piston is of the three-ring type, ground and lapped to a perfect fit. Ignition is jump-spark; cooling is by means of water circulated from a positive-driven gear-pump; and lubrication is by means of a four-feed mechanical oiler of the Lavigne type. The gearset gives two forward speeds and reverse through which a speed of from 4 to 30 miles an hour, it is claimed, can be obtained; and the control of the car is quite conventional.

The spark and throttle levers are placed on the steering column under the steering wheel; a foot pedal operates the external brakes on the rear wheel drums and the reverse gear of the transmission may be conveniently used in cases of emergency. Three-point suspension of the frame is brought about by using two full-elliptic springs on either side in the rear and a regular buggy type of full elliptic cross spring in front. The axles are of I-beam drop forgings and arch upward in a pecu-

liar manner; the wheels are of the artillery type, equipped with 28 by 3-inch standard clincher pneumatics.

Garford Motor Trucks

In producing the Garford truck, an effort has been made to turn out a vehicle of high efficiency, durability and flexibility, together with ease of control, and to do this the Garford truck has been brought forth with a conventional type of four-cylinder, four-cycle, water-cooled motor located at the front end of the frame under the driver's seat; a dual-friction type of transmission located amidships; and side-chain drive to the 34-inch wheels, which may be equipped with $3\frac{1}{2}$ -inch solid tires in front, and $2\frac{1}{2}$ -inch dual or 4-inch single tires in the rear. This chassis may be equipped with any type of body to meet individual requirements, and it has a normal load capacity of 2 tons. The chassis is so built that any type of body may be used without interfering with the chassis proper, and it may be built to accommodate bodies of any length from 9 to 15 feet. The chassis, complete, weighs 3,900 pounds, and has a normal maximum speed of 15 miles per hour. The cylinders of the motor are cast in pairs, with a 5-inch bore and $5\frac{1}{2}$ -inch stroke, and of the L-type, with the valves all on one side mechanically operated from a camshaft contained within the crank chamber. All outside fittings of the motor are very simple in construction and conveniently arranged. The water pump and magneto, as well as the fan-belt pulley, are all driven from the same gear, which is inclosed with the rest of the engine gears in an oil-tight compartment at the front end. A vertical flat-tube radiator, centrifugal pump and belt-driven fan are features of the cooling system, and the radiator is suspended in a cradle which has no connection with the sub-frame or motor, thereby reducing the vibration. Being placed under the footboards, it is less liable to injury in case of collision. Dual ignition is employed with the current obtained from a battery and low-tension magneto and used in connection with a single unit coil. Lubrication is of the circulating splash system, with the circulation maintained by an inside gear pump. Transmission from the motor is through a flexible shaft connection to a transmission of the dual friction type. This variable speed transmission consists of two friction disks 22 inches in diameter, made from a special friction metal, and are attached through a sliding joint to the flexible shaft of the motor. These disks are moved forward and back by means of a foot lever operated by the driver. By sliding the friction disks toward the rear the forward disk is forced into contact with two friction wheels which slide on their respective transverse shafts, developing what is termed the forward speed. By sliding the shaft toward the front, the rear disk is brought into contact with the

New Santa Fe Trail Now Crosses State of Kansas

Hutchinson, Kas., March 5—The New Santa Fe trail is the name of a fine dirt road that is to be established across the state of Kansas, from Kansas City to the Colorado mountains at Pueblo, Colorado Springs and Denver. At the meeting held in Hutchinson on the last day of January, which was attended by about 500 people, some of them coming from a distance of 500 miles, it was decided to improve the existing roads, for the most part, and to open others for a portion of the distance from Newton, through Hutchinson and along the Arkansas river valley, to the west line of the state of Kansas, at Coolidge.

This route is to follow, for a good share of the way, the route of the old Santa Fe trail, which was the frontier highway established by traders in 1822 and which was the only means of communication for fifty years, or until 1872, when the Santa Fe railroad was built through the state. The distance is slightly in excess of 300 miles, from Newton to Coolidge, and it passes through all of the towns along the Arkansas river from Hutchinson westward. There is a shorter line, for a distance of 85 miles, from Hutchinson to Kinsley, where the former route is joined.

Some state officials in Colorado attended the meeting and it is practically assured that the good roads movement will be extended, early in the spring, from the Kan-Pueblo. Colorado Springs and Denver people are starting a movement that will carry this road on to Denver, the ultimate objective point of the work being done in Kansas.

Agitation is to be started at once on the extension of the road east from Hutchinson and Newton to Kansas City, following the Santa Fe railroad lines, as it does farther west, to the Missouri state line. It is hoped to have good work done on every mile of the road to the Missouri state line before the summer is far advanced. Already work has been started west from Hutchinson and the officers of the road, R. H. Faxon, president, and editor of the Garden City Telegram, and C. H. Scott, secretary, good roads editor of the Hutchinson News, with an executive committee consisting of one member from each county, are to push the improvement and maintenance.

two friction wheels, developing reverse speed. The two friction-driven wheels are suspended, each on a separate jackshaft between the two driving disks. They are fitted with special fibre, which, when brought in contact with the disks, generates a high frictional efficiency. The one disk being brought into contact squarely with both wheels prevents any loss of power through strain or side thrusts, which often occurs when but one disk to a wheel is used.

The Motor Car Repair Shop

WHEN charging several batteries at a time the trays should be placed in a row, connecting the positive of the first battery through a switch and ammeter to the positive of the charging line; the negative of this battery then should be attached to the positive of the second battery, and so on, the negative of the last battery being connected through a suitable resistance to the negative of the charging line. Connecting in the reverse direction will discharge the battery and if continued will ruin the plates. Examine all connections to see that they are tight, when ready to charge.

To charge a battery a direct current must be used; although an alternating current can be employed through a suitable rectifier. Batteries must be charged full, but not overcharged. Overcharging loosens the material in the plates. The extra current used is not only a needless expense, without any gain in the life of the charge, but causes excessive wear. The temperature must not exceed 100 degrees Fahrenheit; and if it nears this point the charging current should be reduced or the charge stopped until the temperature has fallen. During the charge the specific gravity will rise slowly at first, then more rapidly until nearly the end of the charge, when the rise is very slow until it reaches a maximum. The temperature will also tend to rise at the latter part of the charge, but must not become too hot.

If the temperature is allowed to exceed 100 degrees Fahrenheit and the charging current is not cut off, it will continue to rise with increasing rapidity. Every time a battery becomes hot it is permanently injured. Excessive heating will not take place if the battery is accorded proper treatment. Both the voltage and specific gravity should reach a maximum when the battery is fully charged and should be used as checks to determine whether the battery is being charged sufficiently. The voltage and specific gravity readings should

Hints For the Amateur

show no increase during the last hour. During the final stages of the charge water is evaporated, causing a decrease in the amount of the electrolyte and an increase in the specific gravity. As the electrolyte should cover the plates by $\frac{1}{4}$ to $\frac{1}{2}$ inch, it is necessary to replace this loss by distilled water, never by the addition of acid. If acid is added when not necessary it may ruin the battery; this is one of the commonest and worst abuses to which a battery is subjected.

Starting on Compression

It is indeed gratifying to a motorist to be able to start his motor by a simple manipulation of the spark lever, and this is possible with many motors nowadays. Of course, very few, if any, engines will start in this way every time, but the chances of their doing so are increased if the throttle is fully advanced just before the ignition current is switched off. This causes the motor to make a number of quick revolutions after the spark is stopped, and the cylinders are not only thoroughly scavenged, but a rich mixture is drawn into them which remains indefinitely according to the balance of the motor, and its ability to hold a charge.

Cause of Ignition Trouble

The wiring of a car should be examined from time to time for signs of wear in the insulation. It often is found that at certain places the wires are exposed to continual though slight friction, which will ultimately break through the insulation and establish a short circuit. The timely application of a little insulating tape often will save much trouble in this respect. Wires often lie close to or loosen up and fall upon the hot exhaust pipe or muffler and their insulation destroyed by the heat; then again, they sometimes rub against moving parts, such as control rods of the carbureter or ignition devices, so that the insulation is worn away; or the sharp edges may have been left on the insulating tube or brackets designed to protect them and through the aid of the car's vibration their insulation damaged therefrom.

Useful Compressed Air Tools

Recently the principal features of the compressed-air system now in use in a

local repair-shop were illustrated and described, and in Figs. 1 and 2 two rather ingenious tools are shown, which were made by the foreman of this shop for special use in connection therewith. In Fig. 1 a large blow torch is shown, which is designed for straightening frames, brazing and for applying heat to various parts about a car which cannot be advantageously placed in a forge. The tank T is filled with gasoline and the hose H is connected to a convenient nipple in the air-line of the compressed-air system. When the valve A is opened a current of air rushes through the piping beyond in a course designated by the arrows, and when the valve B is opened gasoline is siphoned from the tank, mixes with the air and is vaporized. The advantages of this torch are: That it always is ready for immediate use; no pressure is required in the gasoline tank, and its range of regulation is very great. The size and quality of the flame may be adjusted by regulating the proportions of gasoline and air flowing through the valves A and B, and an auxiliary air valve is provided at F which further improves the regulating facilities. A handle D, which hooks on to the torch at the point E, is provided so that it may be conveniently carried about, and the whole outfit is supported upon a heavy base of large area through a hinged bracket which permits of turning the flame in any direction. The pipe C is merely a vent which admits air to the tank as the gasoline is withdrawn. The device shown in Fig. 2 is of simpler construction and merely is a spraying nozzle used in cleaning out the little holes, corners and crevices of motor-car mechanisms and crankcases which are not otherwise easily accessible. The free end of hose H is attached to the compressed-air line, and that of the other hose G is placed in a receptacle containing warm water and soda or gasoline, as the case may require for proper cleaning.

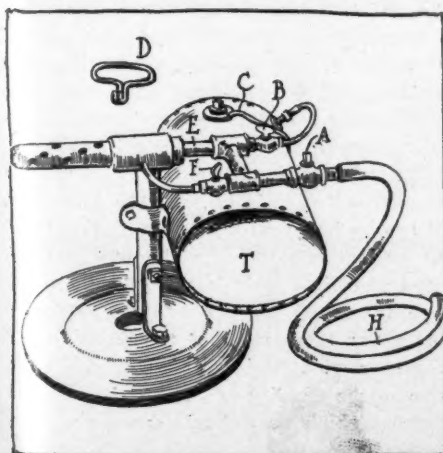


FIG. 1—BLOW TORCH

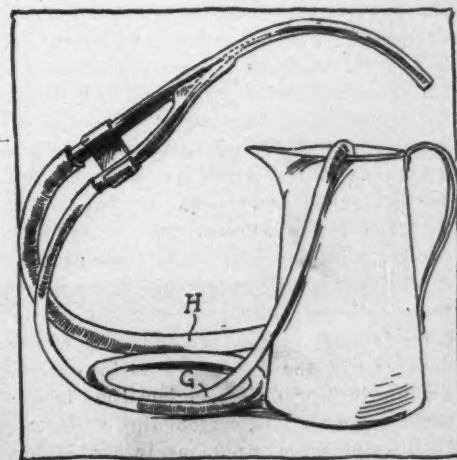


FIG. 2—TOOL FOR FRAME WORK

SOME RECENT MECHANICAL MOTORING IDEAS

NO sooner have all of the motor car makers come to the placing of the change speed lever at the side of the car, than the French maker, Bollee, has returned to the practice of locating the gear-shift arrangements above the steering column, where, as illustrated in Fig. 1, a regulation steering wheel, W, is made use of and of smaller diameter and above it is an inner wheel, W1, for giving the different speeds. This wheel has positions for reverse, R, and the four forward speeds, 1, 2, 3 and 4, located on it. The reason for this French maker returning to this control is the present tendency towards the door at the end of the open space in the rear of the dash, the presence of which makes it very difficult to manipulate the conventional side lever. This French maker soon looks to the elimination of the side levers for both transmission and brake control.

properly meshed. This prevents the gears dropping out of mesh, or engaging two sets of gears simultaneously. As will be noted by the five positions on the transmission wheel, W1, it is but necessary to give this wheel a one-fifth turn to go from one speed to another.

A FRENCH NOVELTY

There has been revived in France this year a type of construction which was brought out in England by the Rover company some years ago, namely, a frameless car, or, as some have termed it, a car without a chassis. This type of vehicle has been resurrected by Lacoste & Battman, Levallois-Perette, France, and is illustrated in Figs. 6, 7 and 8 on these pages. The great characteristic of this car is that the crankcase of the motor, with clutch compartments K, the gearbox G, and a heavy tubing T in which the

is needed to carry the body and it will be noted that the steering gear is attached to it.

Many criticisms have already been launched against the construction of this Simplicia car, one of the chief ones being that the entire weight of the chassis, which includes the motor, clutch and transmission, is all beneath the springs, and its only resilience of support is in the pneumatic tires. In the modern car supporting the motor and gearbox on the frame above the springs gives the benefit of the springs to these parts, and so the amount of dead weight on tires is reduced and the amount of wear is correspondingly reduced.

In contrast with these criticisms comes the great argument for such a car, namely, the simplicity of lubrication. All moving parts which participate in the transmission of power from the motor to the rear

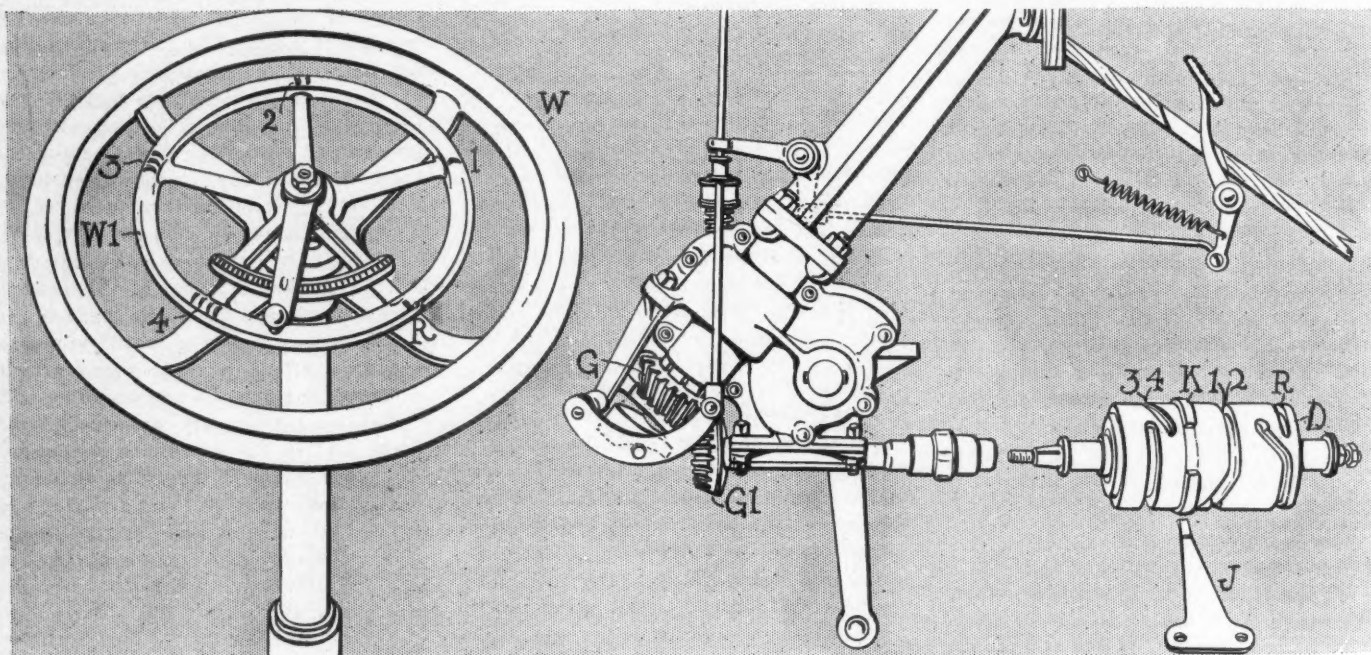


FIG. 1—FRENCH IDEA OF LOCATING GEARSET ARRANGEMENTS ABOVE THE STEERING COLUMN

The method of combining the speed-change devices with the steering arrangement is simple. The steering column which carries the wheel is a tube, within which is a shaft carrying the transmission, W1. On the lower end of this shaft is a pinion, G, in mesh with a pinion G1, the latter on a horizontal shaft leading rearward to the drum, D. In this drum are three grooves, the rear one for reverse, the middle for first and second speeds, and the forward one for third and fourth. In these grooves fit the ends of the levers which are yoked to the sliding gears. Accordingly as the drum is moved the irregular nature of the grooves slid the desired gears into mesh. An interlocking device is furnished in the nature of a ring, K, surrounding the drum. In the ring are five notches, into which an interlocker, J, enters when the gear is

driveshaft is inclosed, are all a unit with the rear axle X, there not being a single universal joint in this complete system. The support of the front end of this unique power plant is on a cross member of pressed steel which does duty also as the axle of the car.

It is questionable what the object of the designers in this unique chassis, which is designated the Simplicia, has been, whether it has been to bring out a car free from universal joints or one in which all the parts are a unit, so that misalignment of the motor with the clutch, the clutch with the gearbox, or the gearbox with the rear axle, is impossible. It cannot be that the inventors aimed solely at making a car in which the frame F is not a necessary factor in supporting the motor or gearbox, because this same frame

wheels are inclosed and run in a bath of oil. There is the usual lubricating provision for the 10-12 horsepower four-cylinder motor; the clutch compartment K is separate, and oil-tight, permitting of a thorough clutch lubrication of the cone surfaces in the clutch as well as the operating mechanism for them; the gearset G with its shifting mechanism is completely housed and runs in oil, and the driveshaft D has its ball bearings at the forward end as well as at the rear well protected from dust and oil. So it is throughout the entire system of this car, every provision is made for lubrication of the parts which, together with the insurance of alignment due to the rigidity of the housings should give a vehicle that should operate successfully.

The four-cylinder motor is 2.95-inch

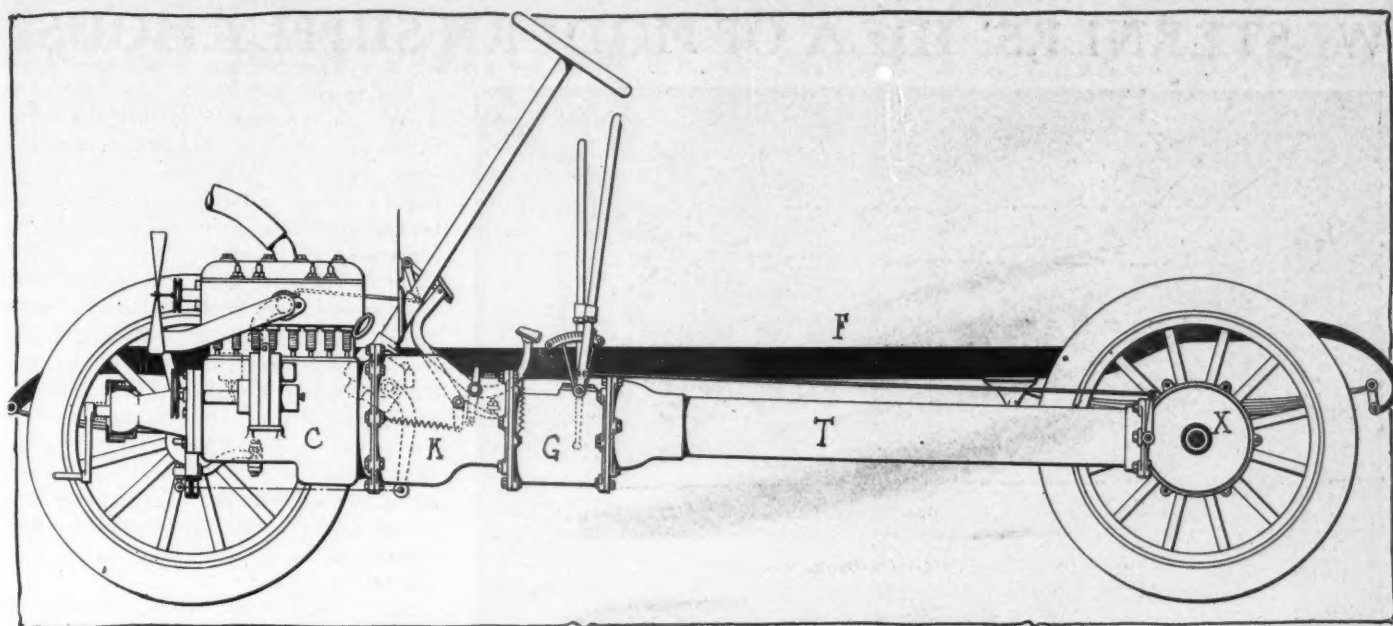


FIG. 2—SIDE VIEW OF CAR WITHOUT A CHASSIS, ENGLISH IDEA REVIVED IN FRANCE

bore, and 3.93 inch stroke, and is guaranteed 25 miles per gallon. The oil tank formed as a unit with the crankcase carries a supply for 240 miles. It is claimed that the reduced weight of the construction used in this car makes it possible to use a small motor. The motor group weighs but 880 pounds, and the front axle, radiator and steering apparatus make 330 more, giving a total of 1,200 pounds for the chassis. The motor employed is an Astor four-cylinder en bloc type; the gearbox gives three forward variations, and the clutch is of cone design. Thermosiphon cooling is employed.

BRINGS OUT TIRE IDEA

The F. A. Law Machine Co., of Hartford, Conn., completed and shipped to the inventor in California a set of motor car wheels on which solid tires may be used. Resiliency in this wheel is obtained by

means of a smaller pneumatic tire encircling the hub. Both the hub section of the wheel and the metal casting which carries the solid rubber tire are provided with a ring of horizontal rollers which enable the two sections of the wheel to move relatively to each other on the small tire without any friction whatever. Ball bearings care for the side thrust, which are carried in the plates which retain the outer section of the wheel in place and at the same time permit an inch or so of play to the hub section, which is all that is necessary to give the same easy motion to the vehicle body that is afforded by the usual pneumatic tire equipment. A strong metal arm on the inside of the wheel connects the two sections, which provides for their revolving in common yet not interfering with the upward and downward movement of the inner section of the wheel. Fred Reed, secretary of the F. A.

Law Machine Co., has equipped his car with a set of these wheels on the rear. The outer tires used on this car are 34 by 4 Cleveland solids. These are being used chiefly for experimental purposes.

JACK-CASTER COMBINATION

The Automobile and Accessories Mfg. Co., Baltimore, Md., manufactures the Norwood vehicle caster, on which the wheels of motor cars can be run when in a garage, and once on these casters the car can be quickly pushed into any desired position in the garage. The company has, however, added an improvement to the caster, which is a rack or jack whereby the caster can be used to support the jack and the jack in turn hold the axle up. The object of this combination is that in a paint shop wheels may be taken off and with a caster and jack it is possible to push the body around the paint shop as desired.

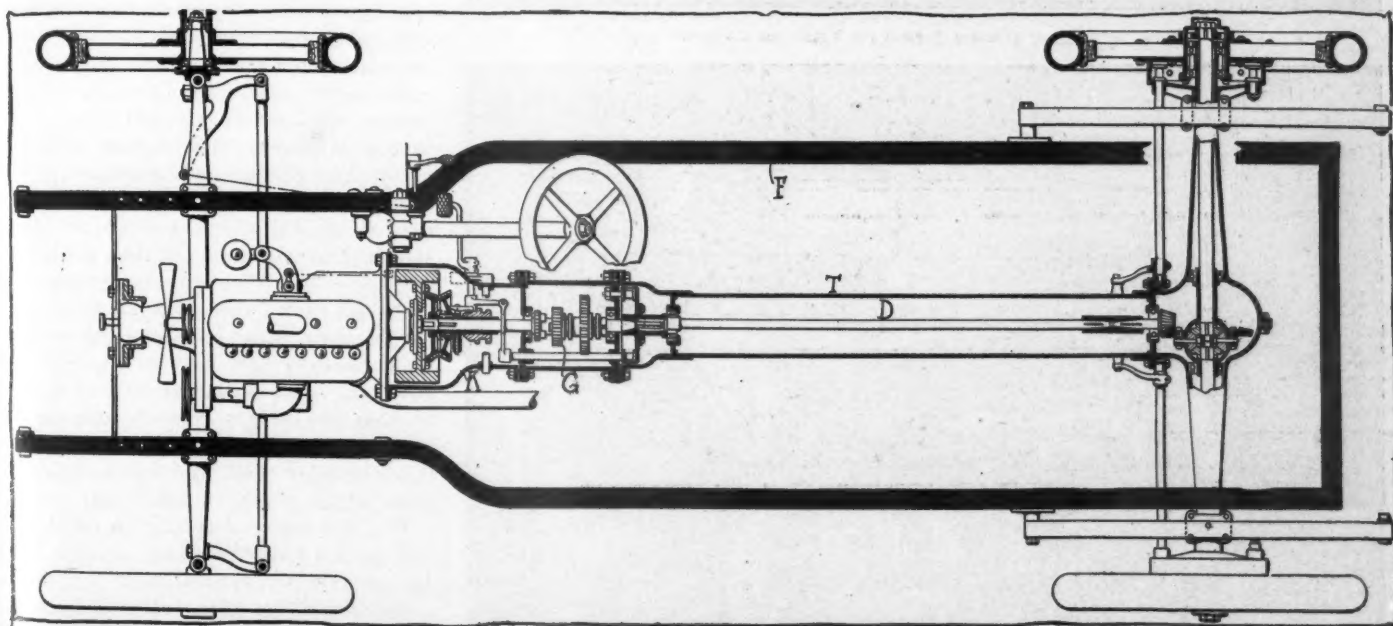


FIG. 3—LOOKING AT THE CAR WITHOUT A CHASSIS FROM ABOVE, SHOWING THE LAYOUT

WESTERNERS' IDEA OF MODERN SUPPLY HOUSE

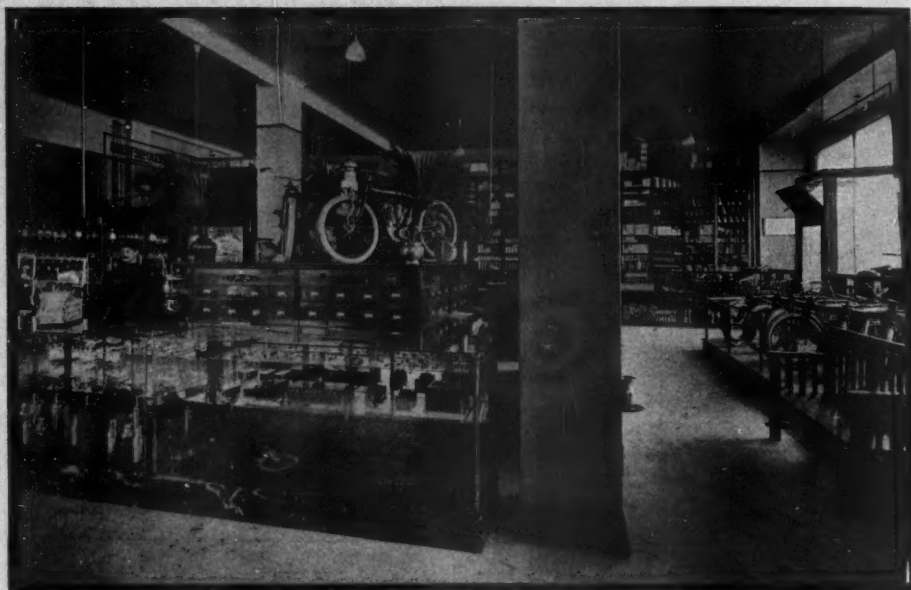


FIG. 1—GENERAL INTERIOR OF FRY & MCGILL'S STORE IN DENVER

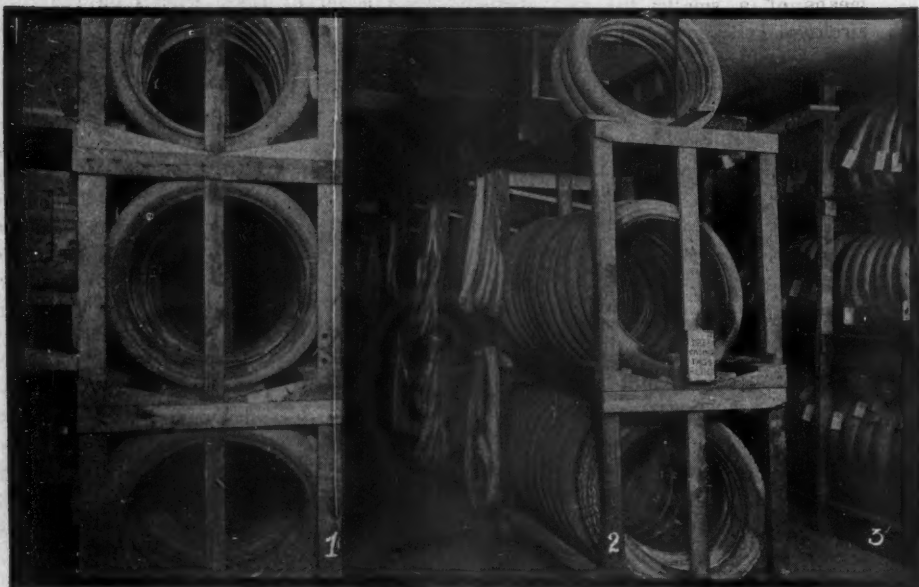


FIG. 2—WHERE A \$30,000 STOCK OF TIRES IS CARRIED



FIG. 3—VIEW OF MISCELLANEOUS STOCK OF GOODS CARRIED

IN a recent issue *Motor Age* drew attention to the magnitude that the supply house had attained in Chicago, and this week shows on this and the following pages its scope in Denver, Colo., which has become one of the great supply distributing centers of the country. The illustrations show the interior ground floor and basement store of Fry & McGill, located in the Majestic building at Sixteenth and Broadway. The Majestic building is an eight-story fire-proof structure with a stone exterior, and Fry & McGill occupy the corner space, 65 feet square, giving a total floor space of 4,225 square feet, which, added to a basement of the same size, makes a grand total of 8,450 square feet, devoted exclusively to motor car supplies and motor cycles.

Fig. 1 shows the general interior arrangements with the motor cycle department to the right. Two posts appear in the center, and there are two others not shown in the illustration. These four posts form a square in the center of the store, and the showcases are carried between the posts with a large cabinet of drawers in the hollow square within the cases, two motor cycles being mounted on this cabinet. This illustration does not show the tire department, which, like the motor cycle department, is on a raised platform surrounded by a brass railing.

In Fig. 4 is shown the lamp and speedometer department, the wall cases with glass fronts being devoted exclusively to lamps. One showcase is given over to lamp lenses and fixtures; two others are devoted exclusively to speedometers, and in front of them is a windshield department. Ten distinct lines of windshields are carried. In the background of this photograph appears the cashier desk C in the gallery, and to the right the book-keeping department B.

An interesting department on the main floor is the clothing corner, Fig. 5. In this illustration the case on the right is made with bevel plate-glass fronts to each drawer, so that the style of cap carried therein is shown. The cabinet K is the center background and contains gloves, each drawer carrying a different style. The case C to the left is one of the finest clothing cases known and has plate-glass on four sides. The drawers disappear at each end within the case, and the carrier for the coats, which has two complete rows of garments, pulls out on an angle, as shown at Z, and turns of its own accord, so that the hidden row of coats is immediately within view. This mechanism is mounted on ball bearings and can be operated readily with one hand.

Fig. 6 shows a complete line of shelves for general supplies along the side. To the left of this illustration is a chest of drawers H, 5 feet wide, 15 feet long and 42 inches high. There are drawers on both sides, and they contain spark plugs and

GREAT SCOPE OF DENVER AS A TRADE CENTER

other small articles. Beneath the general shelving is a series of drawers D1 which contain tools and small hardware. The office O, in the rear, is 18 feet square. Beneath this are private offices.

Before any of the fixtures for this salesroom were made the company engaged the services of a designer of fixtures, who spent a week in the old store studying the situation. His theory of design eventually evolved was based on the fact that small articles should be located where the salesman could immediately lay his hand on them, and he designed them with this object in view. All drawers were made after weighing up and measuring the various articles which they were to contain. In all on this floor there are 1,000 drawers, divided into 6,000 compartments. Quarter-sawn oak is used throughout in the manufacture of the fixtures, which are reported to have cost \$20,000.

Leaving the main floor and going into the basement, Fig. 2 shows the tire department together with a stock of tires carried on hand. The casings shown are carried in the usual racks, the length of which does not appear, but each is 30 feet long, and in the rear of the three racks, designated 1, 2 and 3, are shelves on which the inner tubes are carried in their original boxes. A \$30,000 tire stock is continuously carried.

In Fig. 3 is a general view of the miscellaneous stock of goods carried in the basement. The shipping clerk's desk is marked D, and to the right of it is the steel stairway communicating with the ground floor. Although three motor cycles occupy the center of this room, motor cycle repairing is not done in this basement, but, as Fig. 8 shows, the motor cycle repair shop is a general department in charge of two motor cycle men. The repair work in this is limited to Indian machines. Fig. 7 shows the opposite end of this repair shop in which the equipping of new and old machines with various accessories is done. In this room speedometers, shock absorbers, windshields, lamps, etc., are fitted. On the left of the illustration is a band saw S, which is used for shaping filling boards of windshields so that they harmonize with the contour of the dash. The lathe L, and drill D, are used for motor cycle repair work. The equipping force in this shop is equipped with electric drills, pneumatic hammers, and other devices which will quicken and facilitate the attachment of accessories. This shop is 30 by 60 feet and the company fits free of charge its windshields, speedometers, bumpers, tire holders, trunk racks, and other accessories.

Fig. 9 shows a corner of the basement proper. To the right are the shipping benches B. In the center are stored motor cycles, and on the left are racks R for windshields, from 300 to 400 of which are



FIG. 4—FRY & MCGILL'S LAMP AND SPEEDOMETER DEPARTMENT



FIG. 5—CLOTHING CORNER IN THE DENVER SUPPLY HOUSE



FIG. 6—SHELVES FOR LINE OF GENERAL SUPPLIES

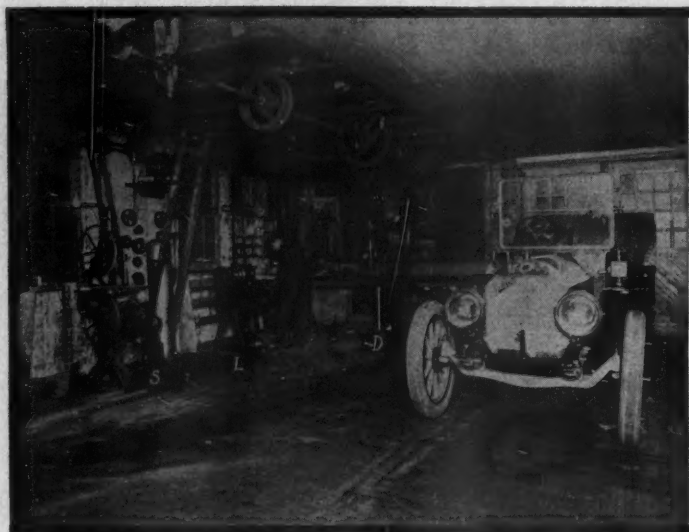


FIG. 7—WHERE ACCESSORIES ARE FITTED TO CARS



FIG. 8—THE MOTOR CYCLE REPAIR SHOP IN BASEMENT

carried on hand. In the rear of the motor cycle crates is a separate room devoted to lamp repair work and in which the workmen repair damaged lamps. Special tools for lamp repair are fitted. In the rear of the rack of windshields is a large compressed air tank with an automatic pump which shuts off when the pressure reaches 140 pounds and as soon as the pressure falls to 100 pounds it starts again. No attention is paid to this except lubricating it. From this air-storage tank two lines extend—one to each of the streets on which the building fronts. Air for inflating tires is furnished free. In the center of this illustration, also, appear the speedometer storage boxes.

So roomy is this basement and so well has the space been utilized that a vast amount of work is done here in the way of preparing goods for shipment.

Supply Houses Make Use of Every Inch of Spare Space

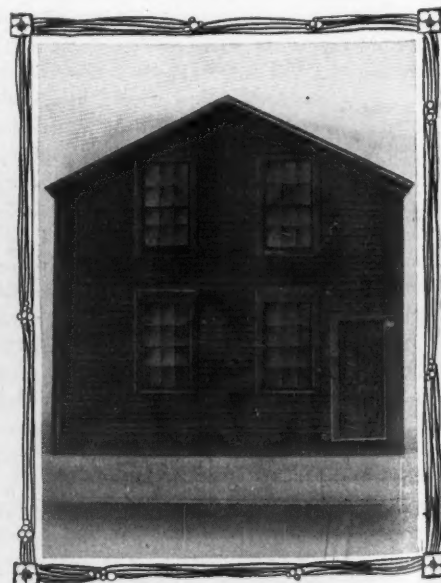
Watching the pennies is a motto that spelled success in more than one business, but it is particularly applicable in the modern supply house such as is found in many of the big cities where goods are handled in great quantities, some of which may be called perishable commodities in that they are liable to be damaged or shop-worn by being carried over from season to season. Therefore, it behooves the manager of such an establishment to use his wits and prevent such waste. That some managers are fully capable of saving pennies in this manner is exemplified in one of the larger cities where is located a supply house which yearly does a business running into six figures and which store is marked by the

penny-saving devices that have been brought into use.

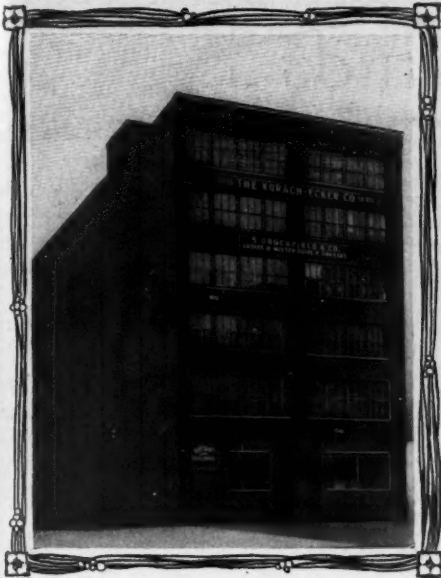
One of these ideas came to light the other day when a spell of fair weather caused the manager of a store to imagine winter was over and that he might as well store away his surplus stock of heavy overcoats. Previously it had been the custom to pack these overcoats away in huge boxes or trunks, the result being that when they were taken out for another winter's business they were in anything but good condition, being much crumpled and otherwise showing the effects of long confinement. In searching about for a preventative this manager discovered that he had a vacant corner in the basement which might be utilized for storage purposes. Securing a carpenter, he had a fairly large-sized room built in this part of the store, lining the interior and exterior with tar paper, and carefully boarding up the cracks with laths, so that he had a storeroom that was moisture-proof. Inside the room he sprinkled a goodly quantity of moth balls and from



CLEVELAND EXIDE BATTERY DEPOT ON PERKINS AVENUE



EXIDE'S FIRST DEPOT IN CLEVELAND



EXIDE DEPOT, WATSON BUILDING, CLEVELAND

the ceiling he suspended a rack on which he could place coat hooks. On these hooks he suspended his overcoats, and by this means he has them where they cannot be reached by water in case the basement is flooded at any time, while the moth balls will take care of any stray insects. The room is lighted by an incandescent lamp, and another advantage it has over the old-fashioned trunk is that the stock of overcoats can be inspected at any time without having to paw through a dozen different trunks searching for different garments that may be called for. By the use of this system he expects that next fall, when he is ready to again display the overcoats, they will be in as good condition as when they first came from the wholesaler's.

Disposing of this stock of overcoats in this manner, the manager brought forth his supply of light garments, which he displays in cabinets faced on all sides by glass, the garments being hung to a suspended rack which may be pulled out for



EXIDE DEPOT, 1206 HURON ROAD, CLEVELAND

the inspection of the goods and the interior of which is lighted by incandescents. There are about a dozen of these cabinets, and when it came to putting in the supply of summer garments it was discovered that the rack would take only about a dozen coats. Searching for the trouble, this manager found that the coat-hangers were to blame—they were too thick to permit of many garments being hung up. Here is where a little foresight came in. Knowing that the big coat-hangers took up too much room, he secured some thin ones, the result being that instead of only putting in 1 dozen coats in each compartment he could put in 2 dozen with the thin hangers, thus utilizing valuable space, and allowing him to group his coats according to sizes.

Numerous Charging Spaces Demanded by Electricists

The increased use of electric vehicles has demanded more attention to charging stations, which is imperative because of the limited radius of action of an electric vehicle. The Electric Storage Battery Co. has established a system of battery depots in several of the leading cities, at which depots a stock of batteries and parts always is carried. Each depot is manned by a force of storage battery workmen who are capable of caring for and giving information regarding the batteries. This depot system was started in Chicago and the service it gave to Exide users was so appreciated that soon depots were opened in Boston, New York, Cleveland and San Francisco. Since the start of these different depots it has been necessary to increase the quarters at all of them. The growth of the Cleveland depot has been rapid. The first Cleveland depot was a wood structure at 23 Oak place; this soon became too small and it was moved to 1206 Huron road, where one-half of the basement at first afforded ample space. Soon the remainder of the basement was required and later the whole basement and the adjoining building as well. The third move was made in 1909 to the Watson building, where the top floor and basement were leased. The facilities of this location were outgrown and the depot has recently been moved to large quarters at 5121 Perkins avenue. The present location, illustrated herewith, is much larger.

This step-by-step progress of the company in Cleveland is also illustrative of its growth in the other cities mentioned. The care given customers in this way is greatly appreciated by users of electricists.



FIG. 9—IN THE BASEMENT, SHOWING THE SHIPPING BENCHES



From the Four Winds



MOTOR SLEIGH MADE BY E. E. SMITH OF WEYHAM, SASKATCHEWAN

More Money for Roads—Roseburg, Ore., is going to have more good roads this year. The road fund voted for the county will aggregate over \$130,000 for 1910.

Mulford Again with Lozier—Ralph Mulford again has associated himself with the Lozier company and will probably be seen behind the wheel of the Lozier in the big contest this year.

Norristown Election—At the annual election of the Norristown Automobile Club, of Norristown, Pa., the following were elected as officers for the coming year: President, John H. Rex; vice-president, E. C. Meyer; treasurer, E. C. Wentz; secretary, William B. Har; directors, E. C. Wentz, Robert A. Jackson, Harry C. Carney and George M. Black. A new class of membership has been added—associate members, consisting of "members in good standing in other clubs which shall extend like courtesies to this club."

Columbus Club Reorganizes—A complete reorganization of the Columbus Automobile Club of Columbus, O., was effected at a special meeting recently when the new constitution and by-laws were adopted unanimously. The changes in the new plan from that of the old is the lodging of all matters of control in the hands of the board of governors, consisting of 10 members of the club of which four are officers ex-officio. The four officers to be included on the board of governors are president, first vice president, second vice president and treasurer. The secretary is to be appointed by the board of governors. A temporary board of governors was named as follows: N. O. Aeby, J. F. Firestone, Herbert Mason, George Echel, M.

J. Hanley and Charles E. Firestone, and Max Morehouse, president; Perin B. Monypeny, first vice president; Dennis Kelly, second vice president, and Herman Hoster, treasurer. The annual banquet of the club will be held on the evening of March 19 also.

Pittsburg Election—The Automobile Club of Pittsburg at its annual meeting elected these officers: President, Edward Kneeland; vice presidents, Edward Kent, William N. Murray, William A. Seif; secretary, Paul C. Wolff; treasurer, William A. Heyl. Mr. Kneeland was unanimously reelected to the office of president.

Another Hoosier Club—Motor car owners of Peru and Miami counties, Indiana, have organized the Miami County Automobile Club, with a large membership. E. Mack Morris, manager of the Great Western Automobile Co. has been elected president and William E. Carson, secretary. The club expects to devote considerable attention to the question of good roads.

Texans Plan Demonstration—Considerable enthusiasm has been aroused by the announcement that the Automobile Club of Houston has agreed to figure prominently in the celebration of San Jacinto day, April 21, the affair being a celebration in honor of the victory of General Sam Houston over the Mexican general, Santa Anna, and the securing of the Texan independence. The battle grounds are about 20 miles east of Houston, with shell road the major portion of the way. The motor demonstration will consist mainly of the parade in which it is said that 600 cars will participate. The club has announced that this will be a flower parade, and

Harvey D. T. Wilson, a member of the board of governors of the club, has offered a silver trophy for the event. The dealers will offer a cash prize in addition, and there will be a number of prizes for the respective classes of cars. The show project was abandoned on account of the lack of time.

Form Good Roads Bodies—The following good roads associations have been incorporated in the state of Washington: The Good Roads Association of road district No. 1 of Thurston county, J. T. Thacker, J. T. Turner and William Hall; the Good Roads Association of road district No. 7 of Thurston county of Olympia, Fred W. Lewis, A. C. Vollmer, et al.

Bisons Wake Up—At the suggestion of Charles F. Monroe, president of the Buffalo Automobile Trades Association, a hill-climbing contest will be conducted at the Lewistown, N. Y., hill early this season. The members of the organization are also planning a 3-days' endurance run, which will take the enthusiasts through the southern tier of counties of New York state and into Pennsylvania.

Indianapolis Buying Cars—The city of Indianapolis expects to add two municipal machines to its already large number. The board of public works has just placed an order for a touring car, conditioned on the city council appropriating money for it, and Thomas A. Winterrowd, building inspector, has asked the board of public safety to purchase a car for his department.

Entries for Los Angeles Meet—More entries for the inaugural meet of the Los Angeles motordrome April 8-13 and 15-17 have been made. The formal entry of Ralph de Palma's three cars have been filed and Caleb S. Bragg has entered in all of the amateur events with his 90-horsepower Fiat. De Palma will drive E. W. C. Arnold's Mephistopheles and the Cyclone in all of the free-for-all events except one or two handicap races, and will pilot his Fiat stock car in all competitions for the 451-600 cubic inches displacement class, to which it is eligible. He shipped the Cyclone and the stock model to the coast Monday and after driving the big Arnold car in the match race with Oldfield at Daytona March 15, de Palma will make a flying trip to the coast with the giant racer. George Robertson is arranging to appear with his new Simplex racer, the formal entry of which is expected to be made within a day or two. James B. Ryall is making a strenuous effort to obtain a fast car. There is a possibility of Bert Dingley and Joe Matson obtaining new racers to drive. Edward A. Hearne of Chicago, has entered

the Fiat which he drove in the last Vanderbilt cup race and may have a Hupmobile for light-car events. Ray Harroun, the Marmon crack, will have his new racer if it is completed in time and is on the ground now with a stock car.

Ohio Still Growing—Ohio's state registrar of motor cars in his report for the month ending February 28 reports 2,255 owners registering motor cars and a revenue of \$12,679. There are now 10,500 sets of number plates issued since January 1, 1910.

Receivership Terminates—The receivership of the Electric Vehicle Co. is now officially terminated. Judge Ralph Wheeler, of the superior court, of Hartford, Conn., at the short-calendar session accepted the final report of the receivers, Henry W. Nuckols, who now is vice-president and general manager of the Columbia Motor Car Co., and Halsey M. Barrett, of Elizabeth, N. J., and approved the sale of the assets of the company by the receivers.

Club Organization in Vancouver—Motoring enthusiasts of Vancouver, B. C., are going ahead with plans for the formation of a club and the erection of a clubhouse to be located on the sea coast somewhere near the international boundary line. It is the purpose of the founders to affiliate themselves with the Royal Automobile Club of London so that the members traveling to England may receive the benefits from the club across the water.

Houston Wants a Test—There is talk, among the members of the Automobile Club of Houston, Texas, of a spring endurance run of some 1,100 miles, and while the plans are not as yet fully matured, it is highly probable that the route will be via Austin, San Antonio, Waco, Ft. Worth, Dallas, and home. The Houston Post endurance run last year, while accomplishing much good as the initial contest of south Texas, was slightly unsatisfactory owing to the fact that the A. A. A. had granted practical absolution from its rigid rules governing such contests and permit-

ted the substitution of others to meet the exigencies of the occasion. In consequence some of the penalties imposed were not well taken by the entrants, although there were no official protests.

Molines in the Glidden—The chassis for the Moline Dreadnought Squadron which have been entered for the 1910 Glidden will be put through some strenuous work among the hills in and around Moline before taking on the official war paint which will be battleship grays as of last year.

Hartford Show Makes Money—That the recent Hartford Automobile Dealers' Association motor car show at Foot Guard hall, Hartford, Conn., was a success is evident from the fact that a dividend of 37 per cent has been declared. The receipts were \$7,449.68 and the expenses of conducting the exhibition were \$5,528.76, leaving a profit of \$1,920.92, which will be returned to the exhibitors. The general expenses of the show were about \$1,100 heavier this year than last.

Savannah Re-Elects Old Board—The annual meeting of the Savannah Automobile Club, at Savannah, Ga., resulted in the following officers being re-elected for the ensuing year: President, F. C. Battey; vice-president, J. J. Rauers; secretary and treasurer, A. W. Solomon; governing board, F. C. Battey, J. J. Rauers, A. W. Solomon, Harvey Granger, G. W. Tiedeman, W. B. Stillwell, D. J. Rosenheim, F. M. Olover, S. E. Theus, A. B. Moore and Jabez Jones.

Verdict in Odenbrett Case—The verdict of the coroner's jury in the matter of the death of George L. Odenbrett of Milwaukee, Wis., who was killed by the explosion of a gas recharging tank early in November, 1909, has just been delivered, after a consideration of exactly 3 months. The gist of the verdict is that gas generating tanks like that which caused the death of Mr. Odenbrett, should not be manufactured and sold because of their danger in inexperienced hands. The passage of a state law prohibiting the manufacture of

tanks of a like generative quality is recommended by the coroner's jury.

Small Show at Sharon—The first show held in Sharon, Pa., brought out large crowds of dealers and owners from the Mahoning and Shenango valleys. It lasted 3 days.

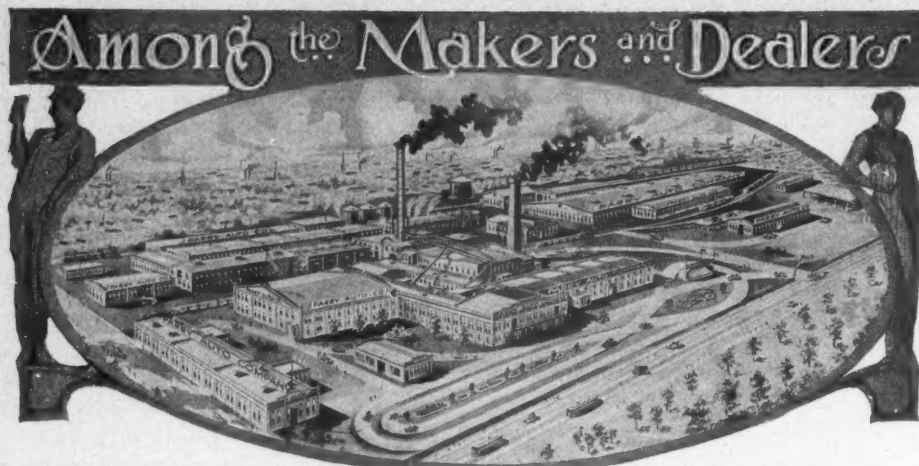
French Motor Sleigh—J. de la Besse has been awarded first prize for his motor sleigh by the A. C. F. in the meeting which was held at Chamouix, Switzerland, last year. This motor sleigh is convertible, in that regular wheels can be fitted, but when desired for use on snowy roads the wheels are taken off and four anti-skid runners substituted. The driving power for this motor sleigh is obtained by a huge worm-gear wheel attached near the center of the frame. The motor is a 20-horsepower four-cylinder.

Suggestions for Tour—President Reuben Warner, Jr., of the Minnesota State Automobile Association, has received a number of suggestions as to the route of the association tour next summer. E. J. Filiatrault, of Duluth, has suggested a route which would cover the range towns of the state including Eveleth, Mount Iron, Buhl, Chisholm, Hibbing, Stevenson, Nashuak, Calumet, Bovey, Coleraine and Grand Rapids. It is possible that this plan will be followed. A number of entries for the tour have been made already.

Staples at the Head—At a meeting of the Connecticut Automobile Association held Friday afternoon at New Haven the following officers were elected for the ensuing year: President, F. T. Staples, Automobile Club of Bridgeport; vice-president, John N. Brooks, Litchfield County Automobile Club; secretary, Philip E. Curtiss, Automobile Club of Hartford; treasurer, C. H. Gillette, Automobile Club of Hartford. The home office of the association is by vote to be established permanently in Hartford. The membership of the state body is now about and it is in a thriving condition.



COMBINATION TOURING CAR AND MOTOR SLEIGH DESIGNED BY J. DE LA BESSE



PLANT OF THE PARRY AUTOMOBILE CO. AT INDIANAPOLIS, WHERE PARRY CARS ARE MADE

Building Body Plant—The mason work on the factory of the Lowell Auto Body Co., of Lowell, Mass., has been completed and the roof will soon be on.

Brewster's Change—C. P. Brewster, formerly manager of the Cleveland branch of the United Manufacturers, has accepted a position with the Olds-Oakland Co. of Cleveland as state and city salesman.

Applies for Receiver—Application has been made in the court of common pleas at Columbus, O., for a receiver for the Ohio State Auto Co., operating a garage business at 121 South Third street. The application is made by Theodore A. Waterson, a stockholder.

Gamble Locates—B. O. Gamble, proprietor of the Gamble Motor Car Co. of Toledo, has purchased the business formerly controlled by the Wood-Kessler Auto Co. The place is especially equipped for repairing and overhauling cars, and the garage and salesrooms are among the most modern in the city.

Simms Visits America—F. R. Simms, president of the Simms Magneto Co., has arrived from England, and intends giving his personal attention and work to the American business. So far, the Simms magnetos have been imported complete from the London works, but in future the company is arranging for assembling, finishing and testing of the British-made magnetos at the New York branch, where it has installed repair shops. It is the intention of Mr. Simms to shortly establish a large American factory.

Washington Changes—The Cook & Stoddard Co., which has the agency for the Pierce-Arrow, Franklin, Cadillac and Baker in Washington, D. C., will open a downtown salesroom at 1313 New York avenue, during the latter part of this month. Lincoln & Ballard, of Washington, D. C., have incorporated with a capital of \$4,000, divided into 400 shares of \$10 each. Fred S. Lincoln and W. M. Ballard are the incorporators. They will open a salesroom on Fourteenth street in the near future. The Warner Motor Co. has been sold to W. S. Wyman, who will add an-

other story to the building. He intends to operate a large machine shop in addition to doing a garage business.

Burke Joins Page—Percy Owen, vice-president of the Carl H. Page & Co., of New York, announces the appointment of W. W. Burke as business manager.

Puts in Sprinkler System—The Moon Motor Car Co. of St. Louis, has inaugurated an automatic sprinkling system in its plant at a cost of \$7,500. The system will flood the entire factory in 5 minutes.

Will Make Taximeters—The Pittsburg Taximeter Co. has been organized by Grant McCargo, Charles A. Blanchard and John W. Weibley, who are officials in the Pittsburg Taxicab Co. They propose to start soon in the manufacture of taximeters and speedometers.

New Lozier Man in Chicago—The Lozier Sales Co. has been formed to handle the Lozier car in Chicago at 1501 Michigan avenue, taking over the agency formerly held by the Levy & Hipple Motor Co. J. H. Walker is general manager and treasurer, while James Levy, of the Levy & Hipple Co., also is president of the Lozier Sales Co.

Maxwell Branch in Washington—The Maxwell-Briscoe Motor Co. has leased the building at 1321-23 Fourteenth street, N. W., Washington, D. C., and as soon as extensive alterations are completed will open a branch with John R. Thomas as manager. Thomas has been the Maxwell agent in Washington for a number of years. The branch will act as a southern distributing point for Maxwell cars.

Becomes Ohio Corporation—Papers were filed with the secretary of state March 4 incorporating the Firestone Tire and Rubber Co. of Akron with a preliminary capital of \$5,000. This capital will be increased to several millions as soon as the organization is perfected. The incorporators were Stacy G. Carkhuff, John G. Robertson, Albert G. Partridge, Edward P. Palmer and John T. Singleton. The incorporation under Ohio law simply means changing the incorporation from

its West Virginia charter. It was incorporated in 1900 with a capital of \$50,000 under West Virginia laws.

Federal Branch Moves—The Federal Rubber Co. has moved its Boston branch from the downtown section to Massachusetts avenue, where it is right in the heart of the motor colony.

Spring Carnival for Chicago—The Chicago Automobile Trade Association is making plans for a spring carnival to be held some time next month, which is designed to mark the opening of the season in the Windy City.

Bradley Joins U. S. M. C.—L. M. Bradley, who for the past 3 years has been advertising manager of the American Motor Car Manufacturers' Association, and assistant to former General Manager Alfred Reeves, has joined the United States Motor Co. He will act as director of advertising and publicity.

Changes in Detroit—R. W. Abbott has severed his connection as sales manager of the Imperial Wheel Co. of Flint, Mich., and has taken the sales management of the Mott Wheel Works, of New York. W. C. Lang who formerly represented the National Acme Mfg. Co. of Cleveland, has become sales manager and treasurer of the Centaur Motor Co. of Detroit.

Mitchell Has Hospital Corps—The Mitchell-Lewis Motor Co., of Racine, Wis., is making every provision for the comfort and convenience of its thousands of employees. The latest innovation is a hospital corps. A Mitchell is stationed at the plant at all times, day and night, ready to transport an injured man to a physician's office or hospital, as occasion requires.

New Taxicab Company—The Twin City Taxicab Co. has officially opened for business in Minneapolis, with R. L. Malcolm in charge of the operating department. The headquarters are at present in the Parker garage on Tenth street, Minneapolis. It is now expected that the first Alco demonstrators will reach Minneapolis this month, and as several buyers are awaiting their arrival, an effort will be made to hasten the shipment.

Has a New Factory—The new factory built by the Western Motor Co., at Marion, Ind., is 450 feet long, 66 feet wide and two stories high, containing about 60,000 square feet. This factory has been used, so far, in the manufacture of the 4 by 4 Rutenber motor, which the Western Motor Co. makes, the other sizes being made in the Logansport factory. No casting is done at Marion, the large foundry belonging to the company at Logansport having sufficient capacity to more than supply the needs of both factories; in fact, is doing considerable work for outside motor manufacturers, as the company makes a specialty of this class of castings. The Marion factory is made of re-enforced concrete, is fitted with steel sash, and is fire-proof in every respect. All machinery

is run with electric motors. The Western Motor Co. with its two factories, has a capacity of about 10,000 motors yearly. Both factories employ about 700 men.

Reduces Capital Stock—The Avery Portable Lighting Co., of Milwaukee, Wis., has filed an amendment to its articles of incorporation, reducing the capital stock from \$10,000 to \$2,000.

Ships Shields to Italy—The Banker Windshield Co., of Pittsburg, recently made a large shipment of shields to a prominent manufacturer in Italy. The company has been running full time all winter.

Snutsel Going Abroad—Paul L. Snutsel is going to Europe in the interest of the Splitdorf magneto. Mr. Snutsel will go direct to Turin, Italy, and will have charge of the Splitdorf exhibit at the show to be held there early in April, after which he will visit the different manufacturers of France, Belgium, Germany and England.

Hartford Strike About Over—Ever since the strike was inaugurated at the plant of the Hartford Rubber Works Co. some time ago a police detail has been on duty and now that it has been removed the strike is regarded as officially at an end, though there are still many men out. The company, soon after the fuss, offered to treat with the men as individuals, but not as a union.

Change of Name—The name of the Motor Car Co., 1315 New York avenue, Washington, D. C., has been changed to the Zell Motor Car Co. of Washington, being the local branch of the Zell Motor Car Co. of Baltimore. Incorporation papers have been filed, naming A. Stanley Zell, W. S. Kurtz and Sue Coverston as trustees. The capital stock is \$10,000. The new concern will continue to handle the Peerless, Stevens-Duryea, Chalmers and Hudson.

After Schacht Plant—The Business Men's Association of Sandusky, O., will shortly close a contract with the Schacht Mfg. Co., of Cincinnati, for the removal of the latter's plant to Sandusky. The Schacht company, which is engaged in the manufacture of motor cars, is to spend \$50,000 for buildings, and must employ 500 men every year for 5 years, while it will receive a site of not less than 10 acres, a bonus of \$50,000, and twenty-five additional building lots.

Activity at Akron—Announcement is made by the Goodyear company of Akron, O., that 500 additional men will be employed by June 1. At that date it is expected to have the new five-story addition completed which will be used almost exclusively for the making of tires. At the Goodrich company the new wing for the manufacture of rubber specialties will be completed in a short time and employment will be given to 800 additional men. Another change in the Goodrich plant is

doing away with the night shifts. It is expected that more extensive additions will be made to the Goodrich plant during the present year.

Clarke Becomes Retailer—J. M. Clarke, sales manager of the National Motor Vehicle Co., Indianapolis, has resigned to take the agency for the National car in the city of Denver, Colo.

Glide Agency Moving—The Glide Auto Co., of Indianapolis, has moved from 115 West Martland street to 415-419 Massachusetts avenue, and will occupy the entire building as soon as the Maxwell-Briscoe Indianapolis Co. moves into its new building in North Illinois street.

Has a Modern Garage—Handling the Buick, Cadillac, Chalmers, Hudson and E-M-F, the Keck-Gonnerman Co. of Mt. Vernon, Ind., has a garage 70 by 80 feet with two stories in the rear, equipped with all modern conveniences such as elevator, compressed air, steam heat, direct and alternating current, etc.

Driver Also Inventor—Silas Christofferson, the Portland, Ore., racing driver, has started manufacturing the first 100 carbureters which he has recently patented. Christofferson is the driver who last year piloted the Stoddard-Dayton car through to second place in the Wemme cup race. He is employed as foreman of the F. A. Bennett repair shop at Portland, Ore.

Another Empire Branch—The Empire Tire Co., of Trenton, N. J., has opened a branch at Kansas City, Mo., to handle Kansas, Oklahoma and Texas business. This branch will be under the management of Claude Beardsley, who for some years has been assistant manager of the Chicago branch of the same company. The Kansas City store will be located at 1516 Grand avenue.

Licensed Lines Not Drawn—A special meeting of the Association of Licensed Automobile Dealers of the city of New York, was held March 3, at noon, at the Automobile Club of America, with President M. J. Budlong in the chair. The meeting decided to amend the by-laws so that the members will not be restricted in respect to taking part in the same contests or exhibitions with unlicensed cars. A meeting of the directors followed the

special meeting of members at which a temporary arrangement was made to have James M. Carples act as general manager of the association.

Taxicabs for Columbus—A second taxicab company has started operations on the streets of Columbus, O., with about four cabs as a beginning. The company is managed by McDowell & Ruby, who are also the owners of the line.

Lozier's Detroit Location—H. A. Lozier, president of the Lozier Motor Co., has established temporary headquarters in the Ford building, Detroit. During the erection of the new works of the Lozier Motor Co. at Detroit, details in connection with the Detroit plant will be handled from that office.

Toledo Show Dates—The fourth annual Toledo show will be held under the auspices of the Toledo Automobile Dealers' Association on March 28-April 2. The Coliseum, the largest available room in the city, has been secured. Last year there were nineteen exhibitors of motor cars and twenty accessory exhibits, while this year there will be at least a dozen new ones. The association takes in almost every dealer in the city.

Three More Selden Licenses—Seventy-five makes of American and foreign cars now appear on the official list of Selden patent licensees. Those appearing on the list for the first time are: Flandrau Motor Car Co., of New York city, licensed to import and sell in this country the Brasier car; W. H. McIntyre Co., of Auburn, Ind., making the McIntyre car, and the Simplex Motor Car Co., of Mishawaka, Ind., making the Amplex car, formerly known as the American Simplex.

U. S. M. C. Plans—The United States Motor Co. will act as general sales agent for all the lines manufactured by its constituent companies. According to President Briscoe, this does not mean, however, that all the lines which eventually will be manufactured by concerns constituent to the U. S. M. company are to be marketed by the same dealers. While the offices of the new company are located at Tarrytown for the time being, the permanent location of the U. S. M. company's general offices will be at New York city.



PLANT OF WESTERN MOTOR CO. AT MARION, IND., WHERE RUTENBER MOTORS ARE MADE



Brief Business Announcements



Fulda, Minn.—F. W. Johnson has opened a garage and repair shop here.

Pittsburg, Pa.—W. B. Storch has opened a new garage and repair shop at 171-173 Southern avenue.

Baltimore, Md.—Callahan, Atkinson & Co., local representatives for the Locomobile, have moved into their new salesrooms and office, 328 North Charles street.

Pittsburg, Pa.—The Reliance Motor Car Co. has been formed by Lewis Germain, Jr., of the Germain Lumber Co., Herbert N. Munhall and E. H. Niedringhaus.

San Antonio, Tex.—The San Antonio Taxicab Co. of this city, has been adjudged bankrupt in the federal court. Among the plaintiffs is the Fisk Rubber Co.

Pittsburg, Pa.—The Automobile Manufacturers' Clearing House has opened headquarters on Euclid avenue. Its manager is W. H. La Fountaine, who will conduct an exchange for second-hand cars.

Columbus, O.—The Francisco Motor Car Co., organized in Columbus several months ago to act as central Ohio agent for the Ohio, has located its salesroom at 856 North High street.

St. Louis, Mo.—Ashley Scott has formed a partnership with B. Sonnemann to establish a repair business and to handle motor cars. The establishment at 3432 Lindell boulevard will be the new firm's headquarters.

Houston, Tex.—The Auto and Motor Boat Co., agent for the Franklin, Empire and Moon cars, is having a two-story shop built on the corner of Milam and Travis streets. Its floor space will aggregate something like 16,000 square feet.

W. F. Smith's New Deal—W. F. Smith, sales manager of the Maxwell-Briscoe for a large territory, including Pennsylvania and the south, is opening an agency at Washington, D. C., at the head of which he will place John R. Thomas, a well-known Quaker Cityite.

Kansas City, Mo.—A new garage and sales agency is to be established at Lafayette by the Hoffman-Moore, Auto Co., which has just filed articles of incorporation with a capital of \$10,000. A. E. Hoffman, W. W. Hoffman and S. C. Moore are named as the directors.

Pittsburg, Pa.—Application is shortly to be made for a charter for a new company, to be known as the Reliance Motor Car Co. The new concern is to manufacture and deal in motor cars, and self-propelling vehicles of all kinds, together with their parts and appliances. Another new company, to make application for a charter, to be known as the Globe Garage

and Auto School Co., will manufacture and deal in pleasure and commercial cars.

Lansing, Mich.—Articles of incorporation have been filed by the Peerless Automobile Radiator Co. with a capital stock of \$20,000.

Houston, Tex.—J. Wade Cox, who came from Orange, Tex., some months ago, has established himself with the Mitchell, Ohio and Inter-State.

Detroit, Mich.—The Michigan Motor Car Mfg. Co., maker of the Michigan Six, has decided to establish a branch in Ontario, either in Windsor or Walkerville.

New York—Everitt S. Hilton, formerly connected with the eastern branch of Morgan & Wright as manager, has been appointed local agent of the Regal. The salesrooms are being remodeled.

Huntington, Ind.—The firm of Bartlett & Frazier has been dissolved. W. M. Frazier has purchased his partner's interest and will continue handling the Buick and the Rapid and a line of accessories.

Houston, Tex.—The Carroll Auto Co., composed of F. Lee Carroll, W. H. Sprong and Russell Goss, all of Beaumont, Tex., is the latest agency in Houston. Its headquarters are on the corner of Rusk and Travis avenues for the present, but Mr. Carroll states that they will contract for more space immediately.

Baltimore, Md.—The Crawford car will have handsome headquarters in this city within a few months. Walter Scott, the local representative, has prepared plans for a modern garage to be located at North avenue, between McCulloh street and Madison avenue. The building will be one-story and of fireproof construction. The dimensions will be 20 by 100 feet.

Louisville, Ky.—Ground was broken March 1 for the large fire-proof garage of the Reimers Motor Car Co. The building will be two stories in height and will be built of concrete and brick throughout. The lower floor will be used exclusively as a garage with a capacity for storing eighty cars. The second floor will be used as a shop.

Baltimore, Md.—Roy M. Upton, of Beverly, Mass., has joined the D. C. Walker Auto Co. of this city, as sales agent for the Studebaker, Flanders and E-M-F cars. Frank W. Darling, secretary of the Automobile Club of Maryland, has accepted a similar position with the Little Joe Wesienfeld Co. Gordon Clarke has become manager of the accessories and motor cycle department of the Wesienfeld Co. C. R. Misner, formerly mechanical engineer for the Olds Motor Works, has been placed in charge of the Oldsmobile

section of the Standard Motor Co. of this city.

Hackettstown, N. J.—M. S. Neighbour has plans prepared for the enlargement of his garage on Hope street.

Madison, Wis.—The Madison Auto Co. has installed a tire repair and vulcanizing plant. William A. Jackson is manager of this department.

Kittanning, Pa.—The Kittanning Automobile Co. has been organized by Harry P. Taylor, H. N. Sankey and James A. McMasters.

Indianapolis, Ind.—The Henderson Motor Sales Co., local agent for the Cole company, has announced the opening of its new establishment at 23-25 East Ohio street.

St. Louis, Mo.—The Broadway Vehicle Co., which handles the Demot car, has announced that it will in future carry motor trucks and light motor delivery wagons.

Milwaukee, Wis.—The Stroh Die Molded Casting Co. will occupy the seventh and eighth floors of a new manufacturing building to be erected at Michigan and Jefferson streets.

Pittsburg, Pa.—D. P. Reighard, A. J. Schmitz and Ralph R. Nowlen have organized the Globe Garage and Auto School Co. which is applying for Pennsylvania charter. It will have headquarters at Ellsworth and College avenues, East End.

Waukesha, Wis.—The R. L. Kenyon Co., manufacturer of tops, covers and kindred goods, will occupy its new factory about April 1. The company recently moved from La Crosse, Wis., to Waukesha. The company will employ 100 men.

Boston, Mass.—Charles Addison Mailey and B. N. Crockett have formed a partnership. They have been appointed agents in this city for the E-M-F and the new concern is to be known as the E-M-F Boston Co. Headquarters have been opened at 889 Boylston street.

Philadelphia, Pa.—The Tioga Automobile Co. has taken possession of the new establishment at Broad and Callowhill streets, where it is to make its headquarters in the future. The former plant at Broad and Tioga streets is to be retained as a storage and repair plant.

Madison, Wis.—The Hokanson Automobile Co., on March 1 sold its one hundredth 1910 motor car for immediate or spring delivery. This record marks the concern as one of the largest in the west. The Hokanson company is distributor for the Olds, Buick, White gas and steam and Oakland cars, and the Waverley electric in an extensive territory in western and

southern Wisconsin. The main offices are in Madison, the state capital.

Cleveland, O.—The Miami Vulcanizing and Rubber Co. increased its capital stock from \$5,000 to \$15,000.

Fond du Lac, Wis.—Thomas W. Meiklejohn has associated himself with the agency for the Ford in that city and surrounding territory, headed by P. B. Haber.

Rochester, N. Y.—Plans have been filed for the erection of a two-story brick garage on Exchange street, near Court. It is to be built for T. J. Northway, and is to cost \$20,000.

Clinton, Ia.—The Hopkins Motor Car Co. has been organized and has secured five counties on the Jackson and the Fuller lines. Quarters have been secured at 101-103 Fifth avenue. A. H. Hopkins is manager.

Lafayette, Ind.—W. E. Morrison has moved to the location formerly occupied by Charles Shambaugh at 210-212 Columbia street, where he has put in a repair and machine shop, occupying the three-story brick building.

Philadelphia, Pa.—W. J. Coghlan, formerly identified with Thomas B. Jeffery & Co. and the Moon Motor Co., has succeeded Laurence C. Fuller as manager of the Philadelphia branch of the Chadwick Engineering Works at 254 North Broad street.

St. Louis, Mo.—The Mitchell company's garage has been formally opened at 4921 Delmar boulevard, St. Louis, and a new system, at least in St. Louis, for handling customers' cars has been inaugurated. All cars are moved from washrack to stall by hand, not a car being run with its own power by employes of the garage. This is



Catonsville, Md.—Baumann & Lilly, Washington.

Washington, D. C.—Taylor Pollock, Oldsmobile.

Baltimore, Md.—F. W. Sandruck, Moline.

Washington, D. C.—Lincoln & Ballard, Spoerer.

Indianapolis, Ind.—Co-Auto Motor Co., Demot and Monitor.

Indianapolis, Ind.—Frank P. Fox, Pope-Hartford.

Indianapolis, Ind.—A. L. Sheridan, Palmer-Singer.

Indianapolis, Ind.—Weber Automobile Co., Apperson.

Columbus, O.—Kimmell Brothers, Overland.

Columbus, O.—Franklin Cycle and Supply Co., Detroit-Dearborn.

Houston, Tex.—Carroll Auto Co., Marlon and Overland.

Houston, Tex.—J. Wade Cox, Ohio.

Portland, Ore.—Keats Automobile Co., Graham.

Portland, Ore.—Covey Motor Car Co., Grady.

St. Louis, Mo.—Scott & Sonnemann, Springfield.

West Newton, Pa.—Larimer & Lowry, Auburn.

Washington, D. C.—Bennett & Collins Co., Staver-Chicago.

Washington, D. C.—Emerson & Orme, Apperson.

Madisonville, Wis.—C. R. Schultz, Lambert.

a rather expensive way of handling cars, but the system promises to prove popular.

Cleveland, O.—The Buckeye Garage Co. is to erect a new garage on Euclid avenue near East Sixty-fifth street.

Cleveland, O.—The Broc Electric Vehicle Co. has been incorporated with a capital of \$250,000 by Robert D. Morgan and others.

Trenton, N. J.—The Auto Express Co., of Paterson, has given notice of the increase of its capital stock from \$150,000 to \$2,000,000.

Guthrie, Okla.—Articles of incorporation have been filed by the Severin-Lumbard Tire and Rubber Co., of Oklahoma, with a capital stock of \$12,000.

Racine, Wis.—Burkert Brothers, blacksmiths, who opened a garage some time ago, have decided to devote their entire attention to this end of the business and discontinue the blacksmith shops.

Boston, Mass.—The Standard Tire and Rubber Co. has now opened a branch house at 105 Massachusetts avenue, where it is to carry a line of Federal casings and tubes and Thermoid brake linings.

Columbus, O.—The sales room of the Robert F. Boda Automobile Co., central Ohio agent for the National and Mitchell, has been moved from 30 West Main street to a new store room at 25 North Fourth street. The old location is turned into a garage business only under the management of Fred Kiser.

Wyandotte, Mich.—It has been announced by the local Business Men's Association that it has succeeded in securing the Swift Automobile Co. as a local concern. Ground is to be broken for the plant at once; the factory to be located on Mulberry street. William Montgomery is to be the president, and A. J. McKinnon secretary and treasurer.

Omaha, Neb.—C. F. Louck, handling the Marmon, Haynes, Empire, Halladay and Fal-car, has moved into his new garage on Farnam street. The building is 32 by 132 and a one-story brick. The salesroom is in dark maroon burlap panels with weathered oak. Above a six foot plate rail, the wall is in ecru with a steel ceiling encircled by electric lights.

Philadelphia, Pa.—Last week witnessed not a few changes of base of Philadelphia's row. The Tioga Automobile Co., National and Hupmobile agent, transferred its main activities from its uptown quarters at Broad and Tioga streets to centrally-located salesrooms in the new building at 332 North Broad street. Manager George G. Brownlee says that the uptown plant will be retained for storage purposes. The Palmer-Singer branch also did a lighting-change act when it moved into its new quarters, two doors above the Tioga plant at No. 336. The Stoddard-Dayton Auto Co. of Philadelphia has been leisurely transferring its belongings from the old establishment at 206 North Broad street to the new

\$100,000 building at 253-255, on the opposite side of the street.

Baltimore, Md.—F. W. Sandruck, agent for the Gaeth truck, has made arrangements to represent the Moline as well in the future.

Cleveland, O.—The Independent Taxicab and Auto Service Co. has been incorporated with a capital of \$50,000 by J. T. Bayne and others.

Buffalo, N. Y.—The Auto Battery and Electrical Co. has been incorporated at Albany, with a capital stock of \$20,000. It is to make headquarters in this city.

Pottstown, Pa.—W. J. Coghlan is to act as manager of the Philadelphia Chadwick branch, succeeding L. C. Fuller. The branch is located at 254 North Broad street.

Philadelphia, Pa.—F. W. Eveland, manager of the Philadelphia branch of A. G. Spalding & Brothers, Stevens-Duryea representatives, has just closed a deal to represent the Babcock electric in eastern Pennsylvania and southern New Jersey.

Hartford, Conn.—E. R. Mertens, formerly superintendent of the Columbia Motor Car Co., of Hartford, Conn., who severed his connection with that company some time ago to enter the service of the Whitlock Coil Pipe Co., has returned to the Columbia Motor Car Co., as assistant superintendent.

Hartford, Conn.—Work is now well under way for the construction of the new garage of Brown, Thomson & Co., Hartford agents of the Lozier, Stevens-Duryea and Cadillac. The new building is to be three stories in height and will provide for a machine shop, garage, parts room, salesrooms. The frame of the structure is to be of steel.



Indianapolis, Ind.—Toops Automobile Co., capital stock \$25,000, to engage in the motor car manufacturing business; incorporators, E. D. Toops, F. Schussler and C. B. Clarke.

New York—Black Motor Car Co., capital stock \$25,000, to manufacture and deal in engines, motor vehicles, etc.; incorporators, C. C. Darnall, O. F. and E. B. Rost.

New York—Hall Development Co., capital stock \$100,000; to manufacture engines and motor vehicles; incorporators, H. A. Van Liew, H. P. Hall and E. H. Howell.

Camden, N. J.—Chester Automobile Tire Co., capital stock \$500,000; to engage in the manufacture of tires, wheels for motor cars, bicycles, carriages, and vehicles of all kinds; incorporators, J. S. Swain, G. M. Bryson and W. Armstrong.

Peekskill, N. Y.—Lawson Motor Car and Garage Co., capital stock \$75,000, to engage in the manufacture of motor cars and motors; incorporators, W. and A. Lawson and M. S. Lawson.

Buffalo, N. Y.—Federal Motor Co., capital stock \$100,000; to manufacture machinery of all kinds, gasoline motors, etc.; incorporators, H. A. Dann, W. C. Barker and T. C. Koons.

New York—Rubber Cover Co., capital stock \$4,000; to engage in the manufacture of electric and motor car supplies and accessories; incorporators, S. Harris, H. Sallop and J. Kasler.

Wilmington, Del.—Auto Transit Co., capital stock \$100,000; incorporators, L. G. Gray, C. P. Douglas.

Current Motor Car Patents

Motor Car Pump—No. 950,283, dated February 22; to Richard A. Goeth, San Antonio, Tex.—This patent applies to a plunger pump for inflating tires, which is driven by means of its attachment to one of the road wheels of the car. As illustrated in Fig. 2, the cylinder C of the pump is pivoted to the base-plate B, which is designed to form a rest for a lifting jack as well as the pump. The piston rod of the pump is attached to a crank pin P on the extended arm of a removable plate which engages the hub of a driving wheel of the car. Means are provided for holding this plate to the wheel, embodying extensible lateral brace rods adopted to engage the spokes of the wheel where they enter the felly. The lifting jack resting upon the base of the pump holds it securely in place while in operation.

Carbureter—No. 950,278, dated February 22; to Percy J. Dasey, New York city. In this carbureter, which has many conventional features, the air is admitted through the valve V; an annular ring is fitted to the edge of the valve V, which collects a part of the incoming air, and conducts it in the form of a suitable current through a notch therein which registers with the opening of the spraying-channel C. This current of air sucks the liquid fuel from the spraying-chamber, which is in direct connection with the float chamber, and vaporizes it in the regular way. An ordinary form of adjustable needle valve VI is provided to regulate the amount of liquid fuel passing through the channel, thereby regulating its proportion in the mixture admitted to the engine.

Wheel-Hub—No. 949,928, dated February 22; to George W. Grooms, Ottumwa, Ia.—This patent applies to a wheel-hub with a combination annular roller and double ball-thrust bearing. As illustrated in Fig. 4, is comprises a stationary sleeve

a retainer disk D, and a rotary member RW which runs on the rolls R and has annular balls on either side of it to take the thrust. By increasing or diminishing the thickness of the liners L, the annular ball thrust bearings are rendered adjustable for wear. The axle A has an intergal shoulder C at the inner end of its bearing portion, and a nut on its threaded outer end. When the nut is drawn up tight the sleeve and the disk D are rigidly attached to the axle, the liners L serving to sufficiently separate the flange on the inner end of the sleeve from the disk D to allow the rotary member to turn freely and without lost motion. The rotary member is designed to fit tightly into the hub of the wheel.

Explosive Engine—No. 950,162, dated February 22; to Joseph F. Stahl, New York city.—In this motor, which is illustrated in section in Fig. 1, the two-cycle principle is employed, inasmuch as there is to be an explosion at every downward stroke of the pistons, or in other words, a power impulse to every revolution of the

crankshaft. The upper cylinder A is a combined air and vapor-fuel compressor, or pumping cylinder, while in the water-jacketed lower cylinder B the explosions take place which transmit power to the crankshaft C through the connecting-rod F and the piston connected thereto. The pistons of both cylinders are rigidly connected to each other by means of a tubular rod, which is provided with vapor inlet and outlet openings and an automatic poppet valve of conventional design. As the pistons rise in the cylinders means are provided for admitting a combustible vapor into the pumping cylinder on the side of the piston nearest the explosion or power cylinder; this charge of combustible vapor then is pumped into the explosion cylinder immediately after the explosion of the previous charge, as the pistons approach the bottom center; then as the pistons begin to rise the poppet valve in the tubular connection between them automatically closes and the vapor is compressed into an explosive state. At the same time that the part of the upper cylinder under the piston is taking in combustible vapor and forcing it into the power cylinder immediately below, the upper side of the piston in the upper cylinder is pumping air into the oil reservoir O and forcing the lubricant to various parts of the motor mechanism. The inlet port of the pumping cylinder and the exhaust port of the power cylinder, for the unburnt and burnt fuel, are not shown.

Storage Battery Electrode—No. 948,558, dated February 8; to Thomas A. Edison, Llewellyn Park, Orange, N. J.—This patent applies to an active mass for storage battery electrodes comprising a compressed agglomeration of relatively large active particles of nickel hydroxid, individually surrounded by flake-like conducting material composed of nickel.

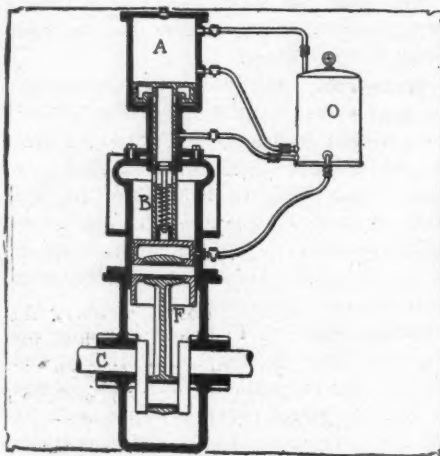


FIG. 1—TWO-CYCLE MOTOR

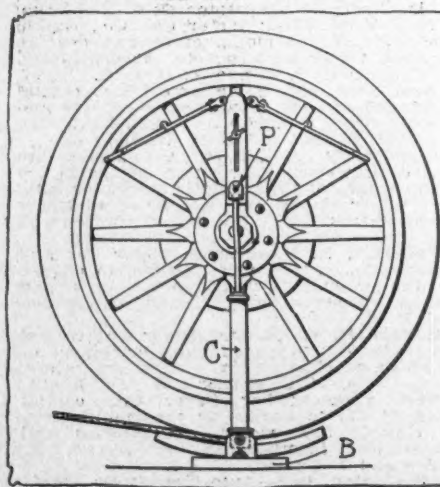


FIG. 2—TIRE PUMP

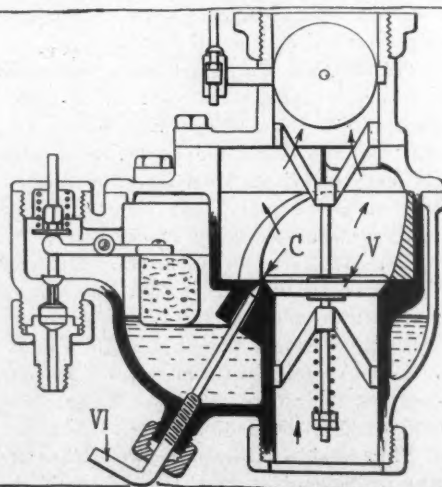


FIG. 3—DASEY CARBURETER

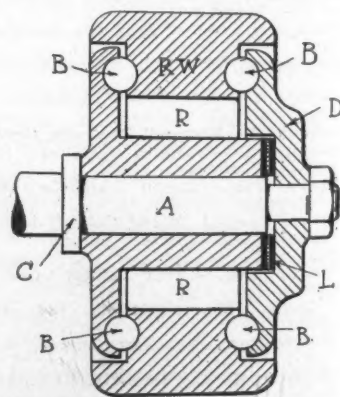


FIG. 4—COMBINATION BEARINGS